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Abstract

This paper will review the theory behind constructivism and how it connects to module based e-learning. Social and cognitive constructivism have similar views, but they are very different. Constructivism calls for a student to learn based off of previous experiences and building on that knowledge to make new assumptions. People argue the effectiveness of module learning, but many find it to be the up and coming way of learning. Technology usage is getting greater and greater all the time so why not shift how we do education? e-learning is the way of the future. Learning modules utilizing learning management systems offer a direct route to both successful learning, but also connects to the theory around constructivism.
Literature Review

Intro

Learning is a process. It is long and hard, sometimes annoying to learn new things. Everybody has a different way of learning that may be more effective than other ways. No two people learn exactly the same. Some people like to see, some like to hear, some simply like to do. Being a teacher is very difficult when it comes to different learning styles. It’s almost impossible to hit every student’s learning style on a day to day basis or lesson. It’s hard to find a way to come close to hitting different styles. In my own experience, I have found that some of the best and most versatile ways of teaching/learning is to create a learning module. Within a learning module, a teacher can present as something like a slideshow or it can be taken home for more of a self-taught course. In this literature review, we will discuss the use, application and creation of e-learning modules. Using a module can be interactive, interesting, full of activities, quizzes and more. The more activities that are utilized within a module, the more it can apply to the constructivist learning theory as knowledge can be built and embedded into a learner’s brain. The focus of this literature review is how constructivist learning theories can be used to guide the creation of e-learning modules.

A learning module is a tool that provides course materials to be presented in many different ways offering learning content as well as quizzes and tests. Within modules, things like audio, video, activities and more can be added into the mix. What I like most about taking modules is the ability to read the text and listen to it if audio is
offered, but then have the ability to be interactive with the course. Everybody knows how easy it is to zone out when doing self-paced learning on computers. Reading in straight lines can get redundant and boring. Modules allow for you to decide which content you want to see; as in - it’s always there, but sometimes you actually have to find it. Whether it be having to hover over a picture or word to learn more about a topic, or doing a matching activity. It becomes much easier to stay in tune with the module and topic being learned. It has been said that, “Student engagement and employability is key to the success of higher education,” (Han, 2013). There have been arguments against students being the key. We will take a look at both ends, student and teacher.

In the early days of the internet, it was not utilized as a mode of e-learning. As it started to advance, more and more options were available. “ It was recognized early in this period that the Internet could help individuals by providing access to other consumers, either as audience members [students] or as information sources” (Lamberton, 2016). As a teacher, you must think of different types of learning theories and how it will apply to the mode of content being taught. When thinking about learning via module, the main learning theory that comes to mind is constructivist. Constructivism claims that learning calls for the student to be active in the lesson and creative when it comes to material. In my experience I have found that students learn better when they have a reason to stay interactive with the content. Not only does interactivity make content more engaging, it is more interesting and it reaches out to many more students to help them remember content even better. The student plays a very big role when it comes to the success of e-learning, but the learner isn’t the only
important piece. When it comes to e-learning and constructivist learning theory, “It describes the important role of the teacher in understanding the learner's rhetoric and intentions, and in presenting information in such a way to fit into the learner's pre-set schema. Constructivism serves as a basis for the discovery, elaboration and scaffolding theories” (Lau, 2014).

Constructivism Methodology

Within modules, the activities offer many capabilities ranging from matching, fill in the blank, drag and drop and more. These activities can also be turned into say.. Science experiments. The true purpose for constructivism is for the learner to become something of an expert on the learning content at hand. There are many different ways to describe constructivism that can bring up different points within the theory. According to Lauridsen Higginbottom, constructivism is “a social scientific perspective that addresses how realities are made. This perspective assumes that people… construct the realities in which they participate” (Higginbottom, 2012). Considering this idea within a learning module, the learner will construct information based off of what they learned and build off of it. This type of learning will help to mold the information in the learner’s memory and it all built from simple activities and relevant information. Constructivism explains how people learn from their own experiences. This again wraps back around to the idea that learning modules come from a constructivist view. If there are enough interactions and activities within the module, a student may sprout knowledge and remember based off the experiences within the activities.
When it comes to constructivism, it sometimes changes based on if it is in an e-learning environment that is self-paced, an online classroom, or traditional classroom learning. “In a technology enhanced environment, one major distinction between social and cognitive constructivism approaches is the focus on interaction with people and co-construction of knowledge in the former, and interaction with content and individual construction of knowledge in the latter, although this should not be seen as exclusively the case in either,” (Făț, 2010). Many online classrooms platforms allow for multiple modules which would offer different topics or different lessons to be split from each other while being in the same environment. In these online classrooms, capabilities are expanse. Instructors are able to separate the class into smaller breakout sessions to help get a more social and collaborative experience. These sessions will allow for online learners to get to know one another and help each other peer to peer if needed. Groups can have their own space to work on projects and activities with each other as well. When a student wants to do learning outside of the teacher-lead instruction or provided textbooks, online classroom environments allow for e-learning resources. “E-learning resources can give students authentic as well as up-to-date information that is not necessarily available in textbooks,” (Sultan, 2011). These resources are often vital to supplement classroom resources and aid in student learning. Different learning systems will place the resource section in different places, but it will almost always be there.
Learning Management Systems

A major thing to think about when the decision is made to teach using online modules is choosing a learning management system to output your information. Posting the content online is not always an easy feat. It is very easy to run into issues when submitting information online. Many of the e-learning environments need daily work to make sure that it runs properly. This causes issues for not only teachers, but also the students who have to take modules. According to Atsusi Hirumi, “Learning management systems such as Blackboard, Moodle, Canvas, and Desire2Learn, along with software applications such as Dreamweaver, Captivate, and Adobe Creative Suites, make it easier for people to create and post online instructional materials. Easier, however, does not mean better. There are now far more people designing online courses and course materials, with little to no formal preparation, practice, and experience in key areas such as, but not limited to, instructional design, multimedia development, and graphic design, resulting in greater variance in the quality of online course materials and, consequently, the quality of the online educational experience,” (Hirumi, 2013). Clearly, no matter which way you travel there is always the possibility of having a bad online experience. Does this mean that e-learning environments are a bad thing? Absolutely not. e-learning is the way of the future. Once these environments or the course administrators can work out all the kinks, online learning is truly a great thing both for convenience and the options that it gives to teachers and students.
Fears/Anxiety

It has been argued that e-learning does not directly apply to the constructivist learning theory. “Based on case study analysis, Ruey (2010) argued for constructivist-based instructional design in online learning but, in sharp theoretical contrast, concluded that “in order to maintain high-quality learning, appropriate assessment plans and adequate facilitation must be particularly reinforced” (p. 706)” (Johnson, 2014). My argument for this conclusion is that e-learning can be facilitated. Learning can be assessed. I am not familiar with every single learning management system, but in my experience between work, school, and creating my own module and inputting it on an LMS, assessment plans are used. An assessment plan 100% needs to be thought through before uploading a module into the LMS of your choice. If there wasn’t a plan then there would be no direction of information, therefore would not be a truly effective e-learning module. As discussed prior, different learning management system platforms allow for instructor-lead real-time lessons. Platforms like Adobe Connect, Zoom and others allow for the recording and utilization of webinars through a learning experience. There are other fears that come up when it talking about e-learning classrooms. According to Alana Phillips, “While in an online class and using a learning management system (LMS), students deal with both computers and communications (Brown, Fuller, & Vician, 2004), which can be challenging and contain uncertainty on their own. Individuals may experience computer anxiety, communication apprehension, or a combination of both. Brown et al. (2004) proposed that different types of computer
applications may cause different types of anxiety," (Phillips, 2016). Although these are things that should be paid attention to, I think that when Phillips pulled information from 2004 these points were much more relevant now. Almost everybody who would have to take online classes or modules has, or has access to a computer. We are in the age of technology and the expanse of the internet. It is definitely an intimidating thing when we first learn a new computer program and are expected to know it immediately. In that case yes, it is understandable to have anxiety or fears about it. Luckily, besides minor issues that learning management systems can sometimes have, these systems are typically very user friendly and quick to learn.

Module Learning

When an instructor chooses to use e-learning as their main platform for teaching, they must make some decisions. Will their course be instructor-lead on a weekly basis? Will it be student self-paced with a deadline? Let’s assume that a teacher will allow the student to go in and self-pace through the course. With self-paced work, students really need to be into the e-learning environment. They need to enjoy it. They need to be focused. Some people may put it off until the final deadline and cruise through the course very quickly and not get much out of the course. Instructors need to monitor students to make sure they are actually putting the work in. “When applied to a learning task, self-regulation consists of steering the learning process by using strategies such as information-seeking, self-evaluation, monitoring, and goal-setting, (Alt, 2016). These responsibilities need to be both on the student and the instructor. Instructors should set
activity or quiz deadlines throughout the course time period to ensure students are actually keeping up. Due to the looseness of online learning modules, many teachers still will not utilize them. The older generation typically wants to stick with traditional modes of teaching and learning. There is too much unknown for them to really comfortable step into e-learning. Eventually they may not have a choice, but to jump into using more computer related technologies which will ultimately bring in e-learning. “As schools continue to purchase more computer infrastructure and software, Web 2.0 tools become more sophisticated, and students become more facile with technology, the pressure on teachers to introduce technology—specifically interactive Web 2.0 elements into their teaching—continues to grow,” (Vance, 2012). e-learning and web 2.0 can go hand-in hand. Web 2.0 has no specific definition, but Vance defined it as technologies that “encompass a variety of different meanings that include an increased emphasis on user-generated content, data and content sharing, collaborative effort, new ways of interacting with Web-based applications, and the use of the Web as a social platform for generating, repositioning and consuming content” (Vance, 2012). When it comes to thinking about traditional learning versus new ways such as utilizing e-learning modules, web 2.0 has really played a huge role into identifying types of learning content.

Module style classes have to grow content wise. This means that, lets say a college professor teaches a class over a 15 week period of time. Week one starts out small. The next week the teacher will references what was taught and build off of that. Activities and quizzes can be given that touch back on previous knowledge to keep it
fresh in student minds as well. This is the way it should be in any class, whether in person or in a learning management system online. When learning something, the student and teacher must stay active in the instruction. Activities, group discussions, games and other things like that are a good way to keep everyone in tune. It is often very difficult to keep the attention of students for an hour long lecture. For the student to truly learn, information needs to be broken up and touched on multiple times. According to Anthony Agbeh, “Instructional [e-learning] methods must allow the activation of prior knowledge in order to process and garner new knowledge,” (Agbeh, 2014). In module based learning, there are ways to set a course to have a pre-test and activities early on which would be a good way to touch back on information from previous lessons to help ensure that learners will be able to remember and build off of what was previously learned.

Types of Constructivism

When talking about constructivism, the different types need to be considered. First there is social constructivism. The social side of constructivism, “emphasizes that it is through interaction and collaboration with others that new knowledge is developed and how the individual gains new understanding,” (Staupe, 2010). How does this play into education? The social side of constructivism is all about being social. Whether a student is in a physical classroom setting or in an online classroom, instructors have a way to make social activities. Often, when working with other students who are in the same situation, maybe unsure of what the classwork includes or what the information
that was taught is about. Having social constructivism in classes gives students time with their peers and sometimes that is the best way to build knowledge from prior knowledge. This can also go in the category of collaboration learning which emphasizes group activities as a mode of learning. This can also shape behavior in learning. It can shape cognitive learning. Within constructivism there are also psychological views that vary apart from the social view. In contrast to social, psychologists believe that “their critique is aimed at the fundamental underpinning of these models, especially the "associationist" postulate of empiricism, by which the mind is conceived as a passive system that gathers its contents from its environment and, through the act of knowing, produces a copy of the order of reality,” (Balbi, 2008). Cognitive constructivism can play a roll with social, but also set itself apart. It works with the psychological views as well. According to Jack Martin, “As a cognitive perspective, constructivism ascribes primacy to the role of the individual in learning and psychological development. Constructivists conceive of hypothetical learning mechanisms or processes intrinsic to the nature of human individuals,” (Martin, 1997). In this claim, the focus is put on the student at the center of the learning role. All in all, both types have similarities, but differences as well.

Connecting Constructivism to E-Learning

It is very typical to see more online learning in higher education. Creating these online environments are considered to be “instructional design.” Instructional design is creating a platform or rolling out a module or similar to be taught to somebody else. Often designers will be the creators or facilitators for sites such as Blackboard, Moodle,
and others that we discussed prior. According to Hesterman, “An instructional approach that reflects a social constructivist understanding of how students learn and involves the integration of real-life experiences in e-learning tasks (Cisco 2010; Hung & Chen 2001) can also facilitate the development of university graduate attributes,” (Hesterman, 2016). He goes on to discuss how this type of learning helps students to expand their problem solving skills and creative, critical thinking. How would a teacher do so? How does constructivism wrap around fully to module-based learning? Well, a good way for an instructor to go about teaching via module is to create the module which holds the content. Have a student navigate the module and interact with it so that they do not lose interest. Keep interest by adding pop-ups via hover, drag and drop activities, videos and more. After the module is complete, add separate assignments and activities that allows the learner to put their newfound knowledge to work. For example, a module has been created to discuss social media marketing. In the module the student can learn all about social media, about marketing, how they interact, legalities to look out for and more. The module has hover interactions, quizzes and more, but how would this module follow a constructivist learning theory? Well, outside of the module, the instructor assigned activities such as creating a Twitter or Facebook. To a student, this would both be fun and interesting, but it would be helping them to build their knowledge based off learned experience.
Conclusion

Constructivism applies directly to e-learning modules if a teacher utilizes the capabilities of the environment effectively. Technology is expanding by day. Many things are being shifted to online including classes. Constructivism calls for a student to learn based off of previous experiences and building on that knowledge to make new assumptions. I believe that a great route to take is a social constructivism and try to have breakout groups for peer learning. Very often, students will be able to build thoughts on one another which again connects back to the constructivist learning theory. Is e-learning better than traditional learning styles? Who is to say which is better one way or another.

Thesis Process

When I first started working on my thesis project, the first question was what I was going to do – was I going to write a paper or do a project? I weighed the options – in my undergrad I was an English major. Would I have the capacity to write a long research paper/thesis? Of course I would, but would I want to? Did I have the right skills to do a project? What type of project would I do? I had no idea. For a few weeks I was lost and scared. In my research methods class I decided to ask a question to my peers in a post “does anyone have any suggestions on what I can do for a thesis project?” A few days later I saw a response from someone with an idea that they had, but decided against it because they didn’t know how they would roll it out. The suggestion was
something surrounding social media marketing. When I read the suggestion I thought, “Great! I know all about social media!” And that was it.

For a couple weeks I kinda put off working on anything specific until it was time to do our first update memo. At that point I thought about it and how I could output SOMETHING. I used to want to be a teacher, so how could I teach a social media marketing course? I thought about work. Is there anything that I had learned at my job where I could output information? It then came to me. With most jobs, employees have to take compliance courses to stay within compliance regulations from company to company. I was going to make a course on social media marketing strategies for small business!

When I decided to create a course, I had to do some research on different programs I could use. I had heard of Adobe Captivate, so I decided to use a trial and figure out if that was the right program for me. Over the next month or so I didn’t do too much projectwise. I picked a theme to use and created a few simple slides (what is social media, what is marketing, etc.). At that point I didn’t know where to go with it, but I also wasn’t too pressured to finish it so I didn’t worry about it. I was looking for new jobs at the time so that was my main focus. I found a job posting for an instructional designer. I got a call back asking to come in for an interview. It didn’t end up being for the designer position, but I told them about my thesis study and they seemed very interested. Two weeks later I had the job. In the meantime, I still had done very little on my project.
It was at this point that I realized I had no clue what I was doing. I had never taken a marketing class before. I had no idea what I had to talk about so how was I going to create a course about it? I had done some research, but still had nothing of substance. I decided to start fresh. I changed the theme and created new slides. This time around I felt better. I went that direction for a few weeks. I was making a slide here or there, but it was not enough. I decide to join a zoom meeting to discuss what I was going to do. Questions were brought up to me that I had never considered. What learning theory would I be basing my project on? What was I going to talk about? With all of the questions that were coming in I realized I needed to do a complete turnaround and buckle down on this project. I had a month (or less) to complete it. The next day I went and bought a “for dummies” book which was all about social media marketing. I created an outline on things I would talk about and I was off.

On my third try I felt that I really got it. With an outline, I felt I had a better grasp on content. With that, I was able to create the whole project in about 3 weeks. In Adobe Captivate, I had to learn how to create slides and use the “timeline.” A timeline is the place that holds all of the pieces to each slide of the course. What does that mean? You can see the separate pieces such as text boxes, smart shapes, characters, interactions and more. The timeline allows you to adjust at what time of the slide that each piece will show up and exit if you want it to before the end of the slide. It also helps with the layering if there are such things as click-box interactions or hovering interactions. When creating the program, I had to learn how to utilize each interaction. It was very difficult at first really getting down to creating everything. Once I learned the interactions and the
timings, the project definitely all came together. I was able to add quizzes, drag and drop and other interactions to help make the course follow a constructivist theory which we will talk about a bit later.

When it came time to publish the project is when I came into a lot of trouble. The Captivate program stopped working all together. I would open it and within 10 seconds it would freeze and I had zero access to anything. I lost an entire day to this and a lot of sleep just trying to figure out what was wrong. How could I lose an entire day and night? I wanted to finish everything and I wasn’t going to have time to do it! I called adobe multiple times with zero help from any of them - it was rather ridiculous. Finally I enlisted help from a friend and we got everything figured out the next morning. Once Captivate was working again, it was time to publish. How was I going to publish this project so that people would be able to access it using the internet? First I started with Captivate Prime. After a few tries there, I found a way to get it uploaded. I later found out that for outsiders to use it, they would have to have prime accounts as well. That idea was out. I then tried to just get the file to be open up as a .swf which with a link should have just opened up the course on a computer with flash player. I went back and forth until this was figured out. It worked! People who weren’t me had access to my module. Great! Not so great… When the module was opened, slides which had smart shapes would lose the master theme. Ridiculous. Next!

I started to think about my [new] job and what I do on a daily basis. I am the e-learning Administrator at ADMI which is the corporate office for Aspen Dental. In my day to day job, I handle enrollments for all compliance courses in the company. All
compliance courses are module based learning. The company utilizes moodle for the output of their courses. Genius! I decided to use Moodle to upload my Module. At first I thought it would be very easy because I use it everyday. Well, I thought wrong. I handle pre-existing courses and employees. I never was given the ability to create courses or upload modules in the system. I really had to tinker around to figure out how to get everything uploaded. After trying a few different ways of uploading content, I finally found a way to structure it like a true course.

When it came time to make sure this project was a true to constructivism, I realized that I had to add in some activities to touch back on gaining experiences. I decided three activities would be sufficient to really help make connections. First I added two activities on the process and creation of Twitter and Facebook. With each of these activities I provided a “how to” guide on how to create them (assuming there must be somebody out there who doesn’t have at least ONE of these medias). I am thinking it will be Twitter, but who knows! Anyway, students have to create these medias, add friends, make posts, etc. After that I asked that students to create a fanpage for their favorite band, show, actor, etc. At that point with these few activities, I thought “Great, I’m done with grad school! Just need to present now!” Well, when it came time to present it was pointed out to me that I didn’t have any sort of activity to bring back around to the marketing side of the module. Back to the drawing boards! Oh noooo, extending school into Christmas - not ideal, but hey as long as it’s right! I decided to add a marketing activity first by form of recognition. I wasn’t sure how there would be enough time for students to actually create a social media campaign so I decided to
have them find one. Find a campaign, get some information about it, answer questions on effectiveness, audience, purpose and more. This activity definitely put me in the right direction of being a full project. Awesome! I then thought to myself, there are three activities that are in direct relation to social media and only one marketing - OKAY let’s do one more activity. This will be good! The last activity included the campaign from the previous week and asked students to build on that campaign. If the campaign is only in a couple social media sites, find one that it’s not in and bring it there! If the campaign is over all medias then interact with the campaign, share news and other stories about it. Post to them and about them to your friend. Generally help spread the word.

Once I added these last couple activities, I finally felt that my project was full and well enough to submit for final review. It’s been a long hard and frustrating road through school, but it was definitely worth it! My manager is already discussing bringing me in on instructional design work within the company with the end result as turning me into a designer. Yay!
Project Screenshots

Click-Box Interaction

Social Networking
Social networking differs from social media in the sense that rather than focusing on posts and sharing, networking is about the interactions with others and finding out who people really are and what they like.

Example: Facebook

In this slide, each square is clickable and allows the student to learn about many different web 2.0 terms.
This slide has a hover ability where the caption will popup when the mouse is over the zone photo they wish to learn about.
Drag & Drop

The drag & drop allows the student to put their knowledge to use in a fun and interactive way.
Top Trends in Social Media

The top trends in 2016: Facebook Live and SnapChat Stories and how they appear on a phone.
The end of the course has recap pages for major topics taught that will end up as final quiz questions.
Introduction to Social Media Marketing

15 December - 21 December
Intro to Social Media Marketing
Read through the module. Learn about Social Media Marketing and then advance to this week’s activity.

Learning Module Response

22 December - 28 December
Learn how to create a Twitter account. Read the resource page to do so.
After reading, do the following:

- Create a Twitter account
- Follow 10 accounts
- Post a Tweet
- When complete, submit your Twitter URL to the assignment page

Throughout the week, stay active! Interact with other users.

Creating a Twitter

29 December - 4 January
Create the Facebook page
Follow 15 friends, celebrities, pages, etc.
Post on your own page
Share someone else’s post
Post your Facebook URL into the submission box

Interact with others throughout the week.

Weeks 1-3 activities in Moodle
Final 3 weeks of activities

Constructivist Theory and E-Learning

How does the e-learning module connect to the constructivist learning theory?

Constructivism calls for a learner to be active in a lesson. In order for them to truly learn, they will build off of experience to create new knowledge. In the module that I created, I had to find a way to wrap it around to follow the constructivist theory. At first I assumed that having interactions and activities within the module would count as constructivism. Come to find out, the activities that I had weren’t exactly constructivist. They followed a more traditional technique with quizzes and minor activities. How would the learner build off of experience if they were in the middle of reading the information? I found a way to make that happen. A student will have to go through the entire module to learn about social media marketing strategies. After the module is completed, they will have to write
a post about what they've learned. The next activity is to create a Twitter and to post a
tweet. The next week a student would create facebook page and post a status.
Following that week they will create a “fan” page and make sure to share and really
utilize facebook abilities. By having a student go back week after week and expand off
their knowledge creating and building experiences, I feel that the course has made a
connection to the constructivist theory.

What I learned

In this thesis, I truly learned a lot. First, I learned how to use Adobe Captivate. In
the past I had never really used any sort of editing or design program. The closest I had
ever used to Captivate was powerpoint which is completely different, but the best I can
think of to compare to. Within Captivate, I learned many things on how to create a
module and interactions within. There are things I never would have thought I'd have
the ability to do. A major thing that I learned is about the constructivist theory. In past
classes we had learned about different learning theories and I never really took the time
to truly think about it and understand what constructivism is. I assumed that it was
simply building knowledge through experience. I thought even less than that. What does
it really mean though? A student can learn, but will they truly learn? I think that it is
essential for teachers to utilize different things such as group work and activities that
ensures that students are active in their learning process to gain experiences. Often
times when someone experiences something rather than just seeing or reading about it,
there will be a better remembrance.
Conclusion

e-learning Modules can follow the constructivist learning theory if it is utilized properly. The student will build knowledge based off experiences and I believe that the course that I created hit that point. The module that was created allowed for students to read, interact and take quizzes to test their knowledge. After the module is completed the student can advance to outside activities to create social media pages and learn how to utilize them. In the end I am happy with the project that I outputted, given the time constraints that I fully restarted the project and created everything in less than a month. Cheers to the end of the program!
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