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How Do YOU Learn?

Shaun Bryant

CADFMconsultants Limited

Learning Objectives

- Consider a learning path and how to manage it
- Learn how to record your learning effectively for later knowledge re-use
- Learn how to apply your learned knowledge in the workplace
- Gain new knowledge that you could use to obtain professional qualifications, such as Autodesk Certification

Description

This class will discuss the methodologies of learning in a CAD environment, regardless of discipline, product, or specialization. Shaun Bryant will take you through methods of learning, from traditional classroom, office, and home environments to the mobile world of laptops, tablets, and smartphones. He will discuss various methods of how to retain what you have learned, and how to reuse that knowledge to work toward Autodesk Certification and other professional qualifications in your discipline. So, as Shaun will ask you in this class: How do YOU learn?

Speaker(s)

Shaun Bryant is an Autodesk Certified Instructor in both AutoCAD and Revit Architecture with sales, support, and technical expertise, CAD managerial skills, with a total of 30 years of industry experience. Shaun has worked as a consultant, trainer, manager, and user, all of which helped him develop a diverse skillset. His career has included 18 years as a CAD, BIM and facilities management consultant and trainer; with the earlier years of his CAD career in sales, pre-sales, and business development; and industry experience as a CAD manager/user. Shaun has been a director on the board of Autodesk User Group International (AUGI) and he is also the author of the reputable CAD blog, Not Just Cad! He is a seasoned Autodesk University (AU) speaker and was the AutoCAD expert at the inaugural Autodesk University London in June 2017. He is also an Autodesk University Speaker Mentor and an AutoCAD Influencer. He is also the author of the recent Wiley title, 'Tinkercad For Dummies', and is known to dabble in a bit of rock 'n' roll as an established singer/songwriter. Shaun lives in Norwich in the UK and is the owner and director of CADFMconsultants Limited.

Introduction

Some of you may know me as the AutoCAD guy who does all the AutoCAD video learning over at LinkedIn Learning (previously Lynda.com). I often get the “Are you the LinkedIn guy?” or “Are you the Lynda.com guy?” and it's normally because they recognize my voice before they recognize me physically. There's a learning trait right there. Recognizing a voice. From birth, we recognize the voices of our loved ones; our parents, our grandparents and as we get older, and become parents too, we recognize our children's voices and so it goes, that 'circle of life' thing that is the whole premise of Disney's Lion King, right?



Simba & Mufasa – The Lion King. Credit: The Walt Disney Motion Picture Company

The whole idea of this class is about how **YOU** learn. We all learn differently, and we all implement that learning in different ways. We all learn using different mediums; people, books, videos (LinkedIn Learning, for example), YouTube, even the good old pen and paper and many, many more.

I will introduce you to the **INTERFACE** of learning.

Your starter for ten.....

.....do you know what an **INTERFACE** is?

Here's some of the Wikipedia definitions: -

Interface (computing)

*In computing, an **interface** is a shared boundary across which two or more separate components of a computer system exchange information. The exchange can be between software, computer hardware, peripheral devices, humans and combinations of these. Some computer hardware devices, such as a touchscreen, can both send and receive data through the interface, while others such as a mouse or microphone may only provide an interface to send data to a given system.*

User interface (UI)

*The **user interface (UI)**, in the industrial design field of human–computer interaction, is the space where interactions between humans and machines occur. The goal of this interaction is to allow effective operation and control of the machine from the human end, whilst the machine simultaneously feeds back information that aids the operators' decision-making process. Examples of this broad concept of user interfaces include the interactive aspects of computer operating systems, hand tools, heavy machinery operator controls, and process controls. The design considerations applicable when creating user interfaces are related to or involve such disciplines as ergonomics and psychology.*

As you can see the definitions of interface are self-explanatory. It is the transition of one type of information (moving a mouse) to another type of information (the pointer moving on the screen).

So, here's the kicker. Did you realise that **YOU** are an interface?

Yep.

You are that human interface that sucks up a massive daily amount of information and interface it to your brain. You then use that information to act in a certain way. As a child, you're like a sponge, sucking up all the information to become a functioning human being, and as your age increases, you become a fully functioning adult. Without boring you with all the science, that's how you get to learn how to drive, how to get a job, or as you approach your mid-thirties, pick up a guitar and learn to play it, as I did!

So, let's see how **YOU** as the interface can learn, and more importantly, I can see how you learn and (perhaps) give you some food for thought on how to implement your learning and make you more effective in your job and in your workplace.

1. Considering a learning path and how to manage it

What is a learning path? Quite simply it is the route you use to get to a certain point in your learning. For example, many of you here at Autodesk University will be taking your Autodesk Certification examinations. That Certification exam is a point along your learning path (it's not the end of your learning, young padawan).

As you move along that path, repeating tasks you have learnt from the interface process, you build muscle memory. You learn to drive, pass your driving test and then using muscle memory gained from that, slowly become a rounded driver over time (sadly, some don't, as shown below).



A somewhat eccentric driving style

A personal example is learning chords to a specific song so that I could sing and play it live on stage. That's what rehearsals are for. Playing over and over until it is just natural.

That's muscle memory.

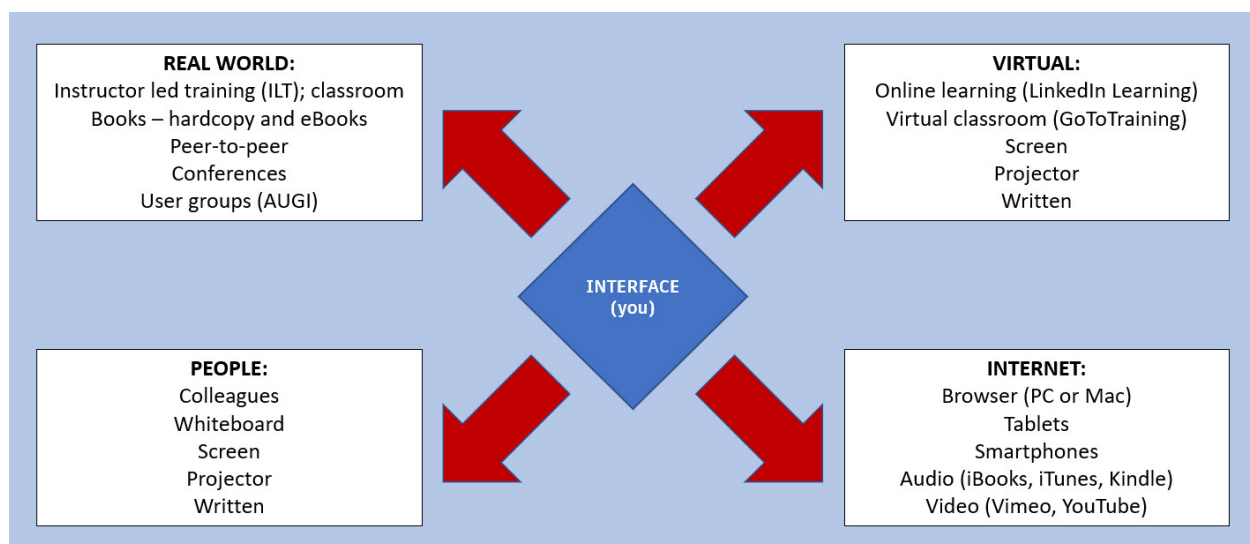
That muscle memory is **EXACTLY** what makes you remember where the LINE icon is on the AutoCAD ribbon and when to use the right-hand shortcut menu to undo a line segment drawn in error.

Repeating a task regularly aids retention.

Finding your learning path.

We all learn in different ways. The best way to find **YOUR** learning path is to manage it. Being the interface isn't easy. Some days, we are bombarded with information; at work, in the classroom (sorry 😊) and even at home, if you are learning a new hobby. For any parents in the audience, I can safely say becoming a new parent is quite the learning curve too.

So, how do we manage all these mediums to learn from? Well, I have broken them down to **FOUR** main areas: -



The FOUR main areas of information

I have used four areas but it's not exclusive. You can use as many areas as you like. Do whatever works for you. Four is an easy number for an AU class, and I only have sixty minutes, so four was a good number!

When you develop your learning path, you want to consider sections or topics, so that all this information that you, the **INTERFACE**, must process then becomes manageable. Now, as I said, I only have four sections to think about, but you may have more and this could be due to numerous factors; employment role, software being used, economic factors, and even the amount of time you want to spend on each section (especially if it's a hobby that might involve your valuable spare time).

REAL WORLD

The most common method of learning in the real world is in the **CLASSROOM**. From your teachers at school up to Instructor Led Training (ILT), you will never find a better learning resource. People learn from people. That's why your Autodesk Authorized Training Center (ATC) will always use Autodesk Certified Instructors (ACIs). They are the people that impart their world-class knowledge to you, the **INTERFACE**, to process, learn and then implement. However, you must repeat what you learn in the classroom to build up that muscle memory. Remember, repetition aids retention. It's no use attending a three-day AutoCAD course and then not using what you have learned and endeavor to apply it six months later. You will NOT remember it. Period.

BOOKS are another good use of information for you to process as the **INTERFACE**. What is beneficial here is that they can be picked up at any time to learn from, which is why you will often be given the training manual you use in the classroom on an AutoCAD course. This is so that you can use this book for reference and **REPEAT** what you have learnt in the classroom to **RETAIN** it. Quite often now, eBooks are used in the classroom, with an app that allows the eBook to be read in a browser, on a tablet or on a phone (an app such as VitalSource Bookshelf). Great for the rainforests and much more environmentally sustainable. Wiley, Sybex and ASCENT are great for official Autodesk training courseware, by the way.

When I was a young draftsman on the drawing board, I learnt from many of the older draftspersons in the drawing office. These elder statesmen of the drawing office were my peers, and **PEER-TO-PEER** learning is often a way of learning that you don't even see as learning. Sometimes known as 'on the job' learning, you are learning from others more experienced than you in the same field, who impart their knowledge to you, so that you can learn from it and **INTERFACE** it in to your own knowledge base to become better at your job. Sometimes, you do learn bad habits, but often, this is how all of us grow in our roles at work, especially if we are assigned a mentor. As an AU Speaker Mentor, I assist with helping new AU speakers build up their AU classes so that they have the knowledge to present effectively. Again, people learn from people.

CONFERENCES are another superb method of learning, that combines the classroom with another incredible **INTERFACE** method; **networking**. AU is an incredible example of this on a large scale. Attending a conference like AU allows

you to interface in the classroom, using exceptional knowledge from world-class speakers, but also interface in a VERY different way by networking with your peers in a relaxed, social environment. You meet people who may have the same learning requirements as you, so that you can compare notes. Better still, you can talk to an expert in their field to ask their advice on how to solve a specific problem. You are learning from them, but in a much more social way. This, in turn, can lead, to contacts that can help you learn. Sometimes, it's not **WHAT** you know, but **WHO** you know, that can solve the problem at hand.

USER GROUPS can be great learning environments too. A User Group is often formed of like-minded individuals who meet at regular intervals to socialize and discuss various matters topical to their environment. Autodesk User Group International (AUGI) are one such group with hundreds of thousands of members all over the globe. A User Group meeting is often application-specific. You might have a Revit User Group (RUG) local to you, for example. If you attend, you are then being the **INTERFACE** in a **PEER-TO PEER** environment once more. You can find AUGI at www.augi.com.



The AUGI webpage at www.augi.com

PEOPLE

As mentioned previously, we often learn from our **COLLEAGUES**. This is one of the most common methods of learning and being the **INTERFACE** between experience and being the newbie. Saying that though, two newbies can still learn from each other. Both might have knowledge in differing fields, which then complement each other. Here's my takeaway tip for you. **NEVER** be afraid to ask a question. If you are not sure, **ASK**. You won't look a fool, and more than likely, your question will be appreciated, as you have demonstrated enough foresight to question if something is correct, wrong or even just downright farcical. Don't be the graduate engineer who ploughs on regardless with the reinforced concrete mesh calculations, only to find out that the concrete pouring pipe won't fit in the mesh gaps on site when the concrete is about to be poured (a true story). Learn from your colleagues, ask your colleagues. Most importantly, **INTERFACE** with your colleagues.

The **WHITEBOARD** is an incredible medium for people to **INTERFACE**. In my humble opinion, there should be an entire wall of whiteboard in EVERY meeting room/conference room in the world. It allows people to interface using the written word, with diagrams, notes, arrows, even Post-It notes. You've heard of the phrase 'brainstorming', right? There is no better way to do it and interface with one another, passing knowledge between each other visually.

The computer **SCREEN** is another great visual medium that provides the medium to **INTERFACE** between individuals. Often, informally, you will sit with a colleague at their screen, discussing a project, going through a workflow or process. This is **PEER-TO-PEER** learning at its most intimate, when you are approaching a topic or subject one-to-one at work. It is how I learnt a lot of AutoCAD back in the day, when I was an AutoCAD jockey, driving AutoCAD every day, getting drawings out every Friday.

The **PROJECTOR** is a very similar medium to the **SCREEN** but as the name suggests, you are projecting the view on your computer screen on to a big wall-mounted screen, or as is often the case, just the wall. Projectors are standard kit in a classroom nowadays and are often combined with interactive whiteboards where applications can be run from the touch-sensitive whiteboard, so that the teacher/instructor doesn't need to sit at a desk behind a computer screen or laptop. They are an incredible learning medium regardless of whether being used in the AutoCAD classroom or by a sports team to review past performance.

WRITTEN

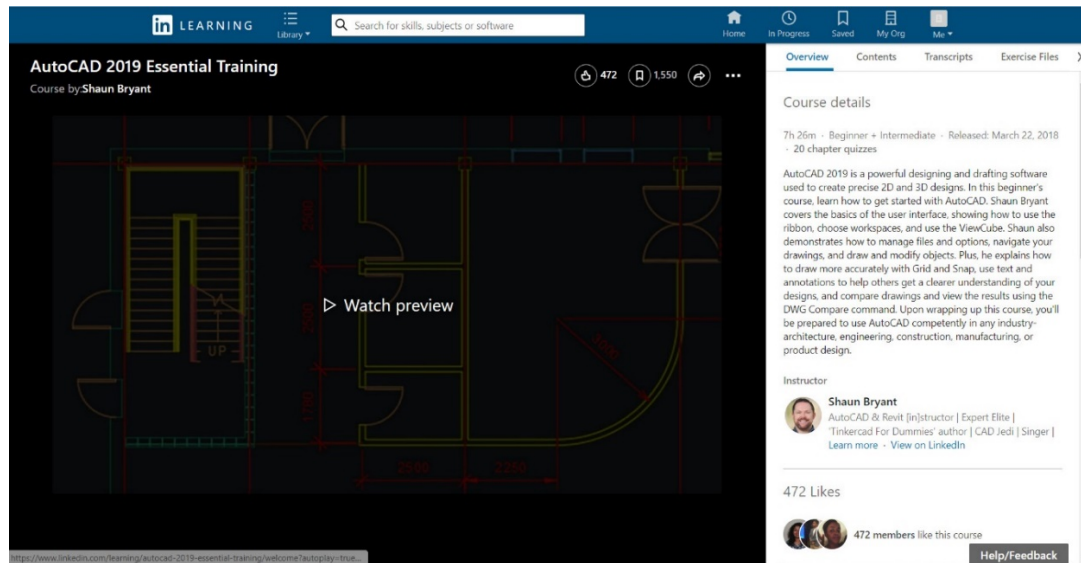
The **WRITTEN** word is still my personal favorite method of learning and retaining all the knowledge I have learnt. I am one of those people that when writing things down, they then stay with me, and I remember them. I retain them, to use a phrase. Here's how I use the written word. I religiously carry with me an A5 notepad (about half the size of a letter sized notepad) and a small pencil case that includes my fountain pen, a pencil and some colored pens and highlighters. In the past, I have kept CAD journals in A4 ring bound notepads (TIP: ring bound, because they lay flat on your desk). I still have them as sources of reference. I write everything down. I mind-map in my notepads. I add action lists. It's all there in the one place. I carry one with me everywhere. We were taught from a young age to write; shopping lists, birthday cards. It's second nature. It's **MUSCLE MEMORY**.

VIRTUAL

When I say virtual, I generally mean via the internet. Or, in the cloud, as is the latest and greatest description. Due to the advances in technology and bandwidth, we can now watch videos to learn from, join virtual classrooms and even project our real classroom in to the virtual world so that our classes can span oceans and continents.

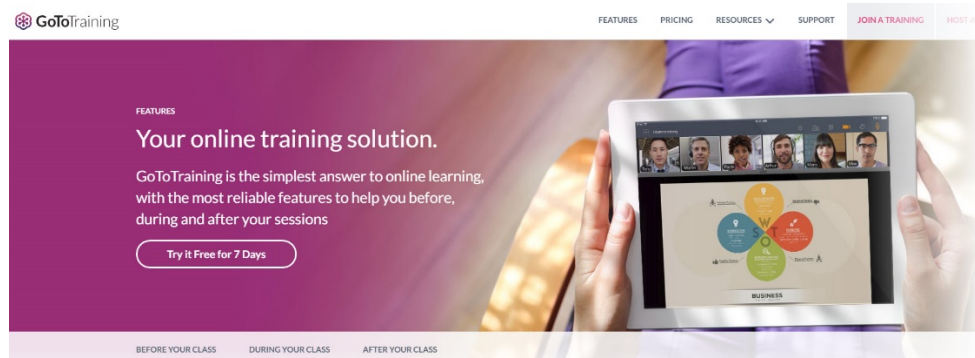
The internet has brought us in leaps and bounds to an amazing way to learn. **ONLINE LEARNING** provides us with 'me' learning, tailored exactly to our needs. We can watch world-class **[in]structors**, such as the ones at **LinkedIn Learning**, take us through entire courses on our computers, our tablets, and even on our smartphones. Due to the incredible connectivity we have now, we can learn anywhere; on a plane, on a train, even walking to work. And what's even more incredible is that all this knowledge is delivered in real time. No waiting for downloads. We have moved a long way from the old 56K dialup modems, right?

LinkedIn Learning provides an incredible curriculum of anything and everything. Sure, at Autodesk University, you expect Autodesk online courses (of which there are many in the library), but LinkedIn Learning is so much more. It has courses on EVERYTHING; AutoCAD, Microsoft, Adobe, technical writing, storytelling, photography and so much more. We never stop learning and LinkedIn Learning is the perfect library to learn from.



The LinkedIn Learning webpage at www.linkedin.com/learning showing my AutoCAD 2019 Essential Training course

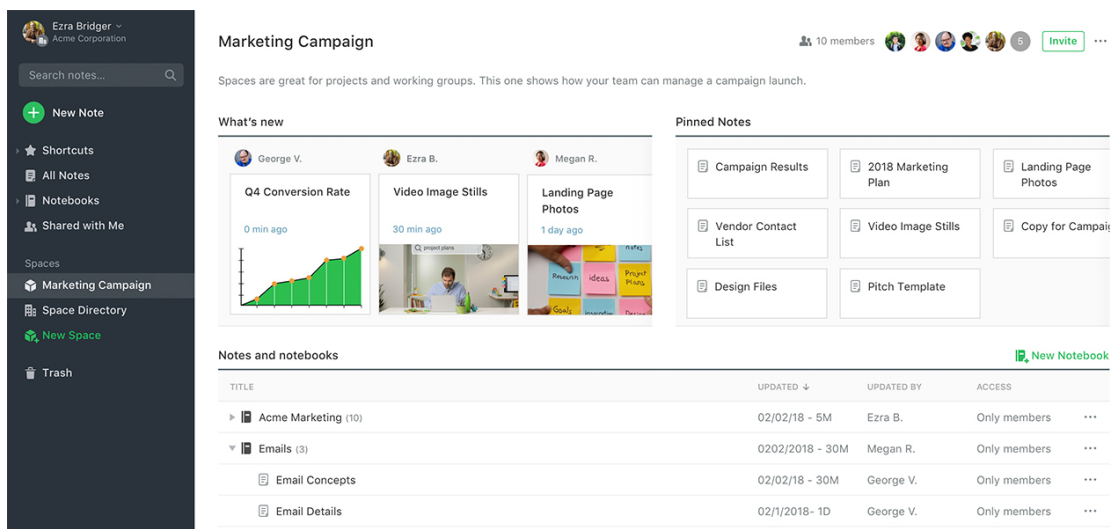
As with online learning, the internet and the cloud give us the **VIRTUAL CLASSROOM**. Products such as **GoToTraining** (<http://www.gotomeeting/training>) allow us to have a classroom in the cloud. The class documents are stored there. Questions can be asked there. Classes can be managed before they start with registration and the necessary documents for registration. During the class, students can be engaged both individually and as a group with tests and polls, and a virtual whiteboard can be utilized too. Another takeaway tip. Look for training organizations that offer this kind of training. It saves all the travel and, long-term, it's good for the planet!



The GoToTraining webpage at www.gotomeeting/training

You can combine **SCREEN** and **PROJECTOR** together here. One of my training clients uses a system called **Attend From Anywhere (AFA)**. The real-world classroom is then projected out in to the virtual world with a webcam and a specialized computer terminal, so that learners can, quite literally, attend from anywhere. Again, the internet and the cloud allow this to happen. The training classroom can be in London, but you can attend from Las Vegas, using your internet connectivity and your laptop, for example.

I mentioned the **WRITTEN** word in the PEOPLE section, where I told you about using the written word to help you retain information and knowledge. Well, once again, the internet and the cloud can help you retain your knowledge you have gained. Like I said, I have many notebooks from years ago, all on a bookshelf, that I use as reference material. Well, you can now use the cloud to have a virtual bookshelf with all your notes. I loosely class this as the written word but most of the time, you would (obviously) type it. There are some amazing apps out there, that act as virtual notepads, but also allow you to store incredibly diverse information. One of these apps is **Evernote**, which I use all the time on my laptop, tablet and smartphone. It is cloud based so it can be used on each device. Better still I can also use the apps **Scannable** and **Penultimate**. Scannable allows you to scan receipts and store them in your Evernote account. Penultimate literally allows you to use a stylus with your tablet, writing just like you would in a notepad.

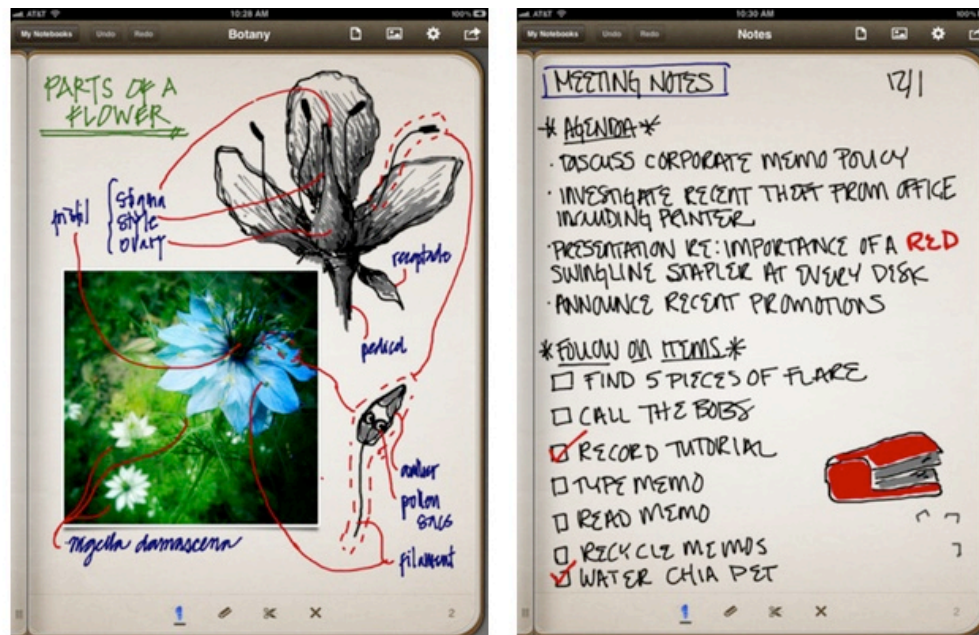


TITLE	UPDATED	UPDATED BY	ACCESS
Acme Marketing (10)	02/02/18 - 5M	Ezra B.	Only members
Emails (3)	02/02/2018 - 30M	Megan R.	Only members
Email Concepts	02/02/18 - 30M	George V.	Only members
Email Details	02/1/2018 - 1D	George V.	Only members

A typical Evernote screenshot (www.evernote.com)



Typical Scannable screenshots on an iPhone - before and after
(<http://evernote.com/products/scannable/>)



Typical Penultimate screenshots on an iPad
(<http://evernote.com/products/penultimate>)

INTERNET

I mentioned previously that **YOU** are the **INTERFACE** for your learning. The conduit between all that knowledge and your brain. What about the interfaces you will use to find that knowledge though? I can guarantee that one of those interfaces will be the **INTERNET** in all its shapes and forms.

One of the more common methods of finding your knowledge is using a **BROWSER** interface. This is the most traditional method of using the internet to find information you need and there are numerous flavors of browser too; Google Chrome, Microsoft Edge, Mozilla Firefox and Apple's Safari, just to name a few

Another typical interface is a **TABLET**. Yes, you are using a **BROWSER** on a tablet to access the internet, just like on a computer or a laptop, but it's smaller, more portable and if you have cellular enabled tablet you can use that portability to your advantage. You could be sitting on your long-haul flight learning AutoCAD on LinkedIn Learning on your iPad or sitting in a Starbucks learning all about Adobe Photoshop with your headphones on. Tablets rock for this reason.

What about using a **SMARTPHONE** to gain knowledge? Yes, you are using a **BROWSER** again, but on a much smaller scale, on a much more portable device. I use my iPhone all the time to 'look' for stuff and I then make notes in Evernote; links to useful stuff that I can learn from, lyrics that I find inspiration in for my own songwriting and book lists that I can use for future teaching and learning. Remember, on Evernote, you can list anything and everything, and your phone is always with you.

Another great interface for you, the **INTERFACE**, is **AUDIO**. Listening is often a great way to learn. Headphones on, world out – total concentration. Audiobooks are an incredible innovation, although not so great with CAD, which is (obviously) a visual medium. However, there are some great CAD, BIM and technology podcasts out there. My good friend, Donnie Gladfelter (The CAD Geek) has a superb podcast out there on iTunes, for example. Listening is a great trait. Listen and learn, as they say.

I mentioned 'listen and learn' above. I am sure you have heard the phrase 'watch and learn' too. **VIDEO** is becoming the norm for the learning curriculum. It is always available online (LinkedIn Learning). It can be downloaded. It can be

streamed. And, combined with audio, it is quickly becoming the medium of choice to learn from and accelerate your skillset.

2. Learn how to record your learning effectively for later knowledge re-use

In the previous section, I provided you with numerous ways and means to learn, gain knowledge, and record that knowledge for future reference, so that it could be retained for use later. Let's now take that up a notch and look in to recording your knowledge in more detail.

Using syntax

Wikipedia defines syntax as the following: -

*In linguistics, **syntax** is the set of rules, principles, and processes that govern the structure of sentences in each language, usually including word order.*

When I create a text style in AutoCAD, I use the following syntax: -

Text style name = **Name_SPACE_height**.

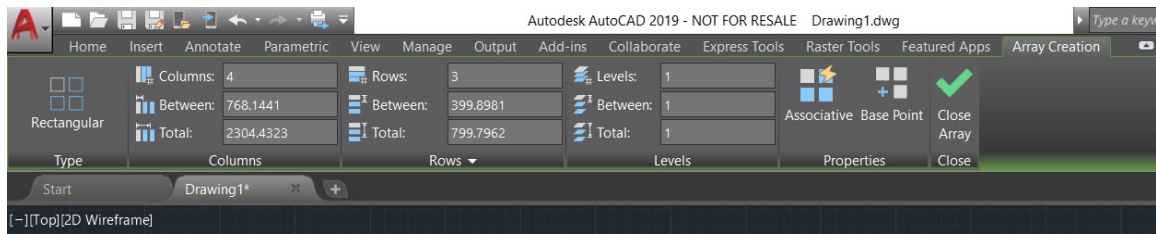
So, I might have a text style called **Notes_LAYOUT_3.5**. This means that I use that text style for notes in the layout tabs, and it is a preset height of 3.5(mm).

In the same way that I use syntax for my text style names, I use syntax for **ALL** my recorded learning knowledge.

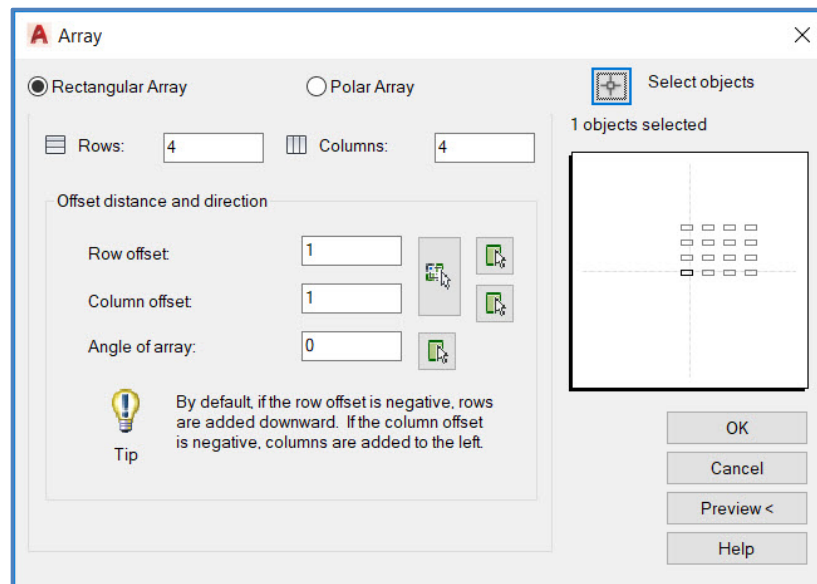
DATE AND TIME

Knowing exactly when you gained that knowledge from your learning is very important. You need to know if it is recent knowledge or less recent. If less recent, it might not apply to that point in your learning path. For example, you might be looking at an older version of AutoCAD where the workflow or process is different, and you need to know the current workflow or process. It could be that you need the more recent one that is (possibly) in your Autodesk Certification examination.

A prime example of this is the AutoCAD **ARRAY** command. Newer versions of AutoCAD used the ribbon for the array commands. Older versions used a dialog box. The older ARRAY command is now known as **ARRAYCLASSIC**. Having this sort of change recorded somewhere is important. Overleaf, you can see the clear difference between the two ARRAY interfaces and how that would affect workflow.



The newer AutoCAD ARRAY command



The older AutoCAD ARRAY command (ARRAYCLASSIC)

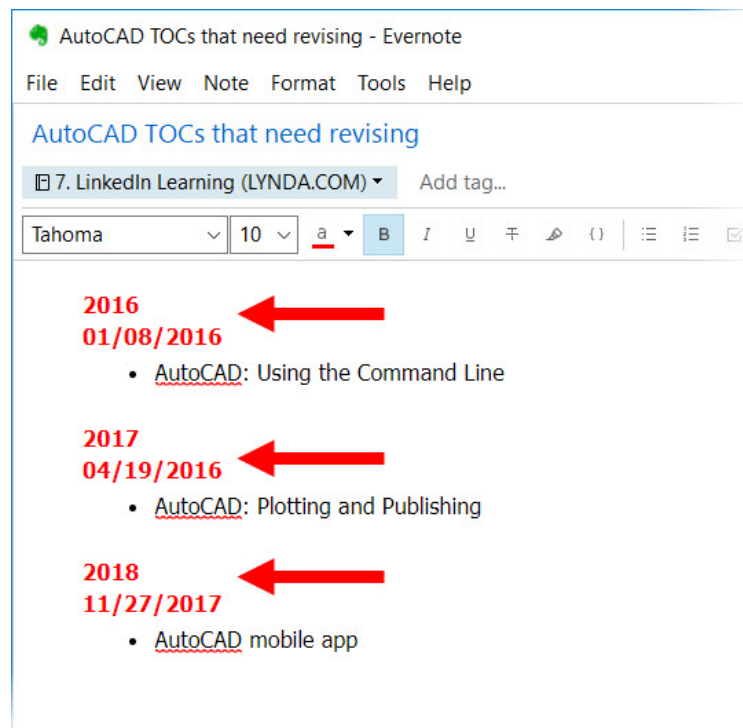
I use a **DATE AND TIME** syntax like this: **YEAR_MONTH_DATE**, and I record it on the front of my notebooks like this: **2018_11_11**, which would represent the date **11th November 2018**. Now, my method might not be your method, but I am hoping you get the idea. Recording time syntax would be similar. You might use 12-hour clock or 24-hour clock, so 11.15 could be **11.15pm** or **23.15hrs**. These methods of date and time syntax are your call, so use what suits you, what will allow you to easily recognize date and time when you need to.

SOFTWARE VERSION

Knowing which version of the software your knowledge was taken from can be incredibly relevant. All my notebooks and CAD journals note which **SOFTWARE VERSION**. So, I have CAD journals for AutoCAD 2019, AutoCAD 2018 and so on, all the way back to AutoCAD 10 for MS-DOS (showing my age now). Why is this so important, you may ask?

Well, here's a little story of what once happened to me. Back in the day, I was an agency (temp) CAD jockey. I was a journeyman CAD draftsman who went from company to company, getting paid a daily or hourly rate for the CAD work I produced. This often involved a brief interview on a Friday afternoon, followed by the question, "Can you start Monday morning?" Now, this is all well and good if you know what version of AutoCAD you are meant to be using on that following Monday. Sometimes, this wasn't even mentioned and (occasionally) I had to work on a much older version of AutoCAD than what I was used to. That's where my software version syntax suddenly became useful on my CAD journals. Things change in AutoCAD over time, and you get used to a newer way of doing things and then, when you must go back to the old ways, you might just need that retained archived knowledge.

My syntax for software versioning is simple; 2019 for AutoCAD 2019, 2018 for AutoCAD 2018 and so on. I always put this on the front of a software specific notepad, or on the page where I make notes, quite often in different colour. If I am using something like Evernote, I simply use a bold different color, like this: **2019**.



A typical note in Evernote with syntax

You can see in the Evernote example the sort of syntax I use; version number, date etc. This is just a simple AutoCAD course listing providing me with reminders of which courses I run that need updating, but it could to apply to any knowledge that you have gained over a period of time.

Obviously, the content of this knowledge is entirely up to you. More importantly, how much knowledge is up to you too!

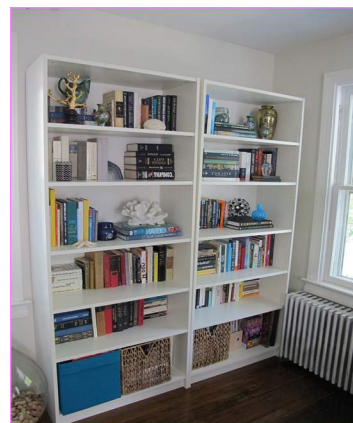
Using storage

As you build up a library of the knowledge you have gained; hard copy, electronic, you then need to decide on how to store that knowledge. What sort of media will you need? How much space will you need? How long is a piece of the proverbial string?

It's simple. The amount of storage you need is **NEVER** going to be enough.

HARD COPY STORAGE

As I have already mentioned, I use ISO A4 hardcover ring bound notebooks to make copious notes about everything I learn. I have a bookshelf full of them dating back roughly thirty years or so (most definitely showing my age now). They are ring bound so that they fold flat on the desk and they are ISO A4 because they fit nicely on the bookshelf. I have found that I tend to go through approximately one book every six months or so, so I have in the region of sixty note books. **STORAGE** is easy. IKEA Billy bookshelves with adjustable shelves and my preferred notebook is the Black & Red brand, with the perforated pages.



(Please note that the bookshelves in the picture aren't mine, but just a stock photo from the internet – mine are in no way as tidy as that...LOL).

DIGITAL/ELECTRONIC STORAGE

To date, I now have **FIVE** Western Digital (WD) portable hard drives. All these drives store my essential knowledge that I need to function as a business on a day-to-day basis. They range in size from 0.5 TB up to 4TB and the cost increases accordingly, but they allow me to **STORE** incredible amounts of data as and when I want to.



A typical WD Elements portable hard disk drive

I am a MacBook Pro user and in the older MacBook Pro versions, there is an SD card slot. As another method of knowledge storage, I use that slot by way of an SD adapter with a Micro SD card of 256 GB. This gives me great transitional data storage, of completed work (or knowledge) that I still need quick access to. All other archived work (knowledge) is stored remotely on the WD portable drives.

As I have mentioned previously, I also use Evernote as a great method of electronic 'notebooking'. This combines the hardcopy notebook with the next method of storage, the cloud.

THE CLOUD

The **CLOUD** is another great method of storing your knowledge base. There are many providers of cloud-based storage nowadays and they all provide suitable interfaces that allow you to maintain a folder structure. Which provider you use, and how you set up your internal filing structure is up to you. Personally, I use **Autodesk Drive** (part of my AutoCAD subscription), along with **Dropbox** and **Box**.



Another great benefit of cloud-based storage is that any part of that storage solution can be shared with appropriate permissions. So, a takeaway tip here. You're a CAD manager with LOADS of 'stuff' you need to store somewhere, but you want your CAD team to have access to it. Simply go cloud-based and share the information where appropriate! All the major providers have a free account with a fixed amount of data, and if you are already subscribed to AutoCAD, Autodesk Drive will be part of that subscription.

Rounding off here

Storage, archiving and recording all your knowledge and data is often a personal (and sometimes, financial) decision. All I have done here is recommend solutions based on my own personal experience. You may find that I have prompted you to look in to this more deeply to refine what you do. You may think I am teaching you to suck eggs, as your existing solution is already your preferred solution. Go with what **YOU** need, based on **YOUR** requirements and budget. Do your research and due diligence and go for **YOUR** solution when recording that knowledge for a later date.

3. Learn how to apply your learned knowledge in the workplace

This is often the most difficult part. You now have the knowledge you need to move forward and be empowered in the workplace. You have been on your training course and want to implement the methodologies you have learnt.

An anecdotal story based on the perception of knowledge....

Many years ago, I went on my first three-day AutoCAD training course for the company I was working for at the time. I was eighteen and had a simple knowledge of computers, so I was the preferred choice to go on the course. Bear in mind, all drafting and design at this company was currently done on the drawing board.

After my course, I sat at my AutoCAD terminal (I had one of only two in the entire company back then) and started working on converting all our standard detail drawings to CAD. They were all originally hard copy drawings in a big folder. My departmental head, a gentleman called Peter, came and sat next to me to watch what I was doing. He sat next to me for around ten to fifteen minutes, not saying a word, which was somewhat unnerving. Peter then said this to me, "Last time I send you on a course for CAD. You still must draw things! I thought you just pressed Enter and out came a drawing!"

After another ten to fifteen minutes of explaining to Peter (with worked examples) how AutoCAD saved massive amounts of time, as compared to the drawing board, he walked away happy, knowing that his investment would save his department large amounts on the bottom line. He also, two years later, promoted me to CAD Manager, to ensure that the CAD function in his department was in safe hands, to use his exact words.

Perception

As per the story above, the perception of knowledge and how it gets used is all important. You need to be able to apply your learned knowledge but ensure that it is perceived to have value.

EFFICIENCY

Learning and knowledge go hand in hand with **EFFICIENCY**. You learn to do something that makes you more efficient in your role. As per the story above, learning to use AutoCAD to generate standard detail drawings, rather than use a drawing board, was a much more efficient use of my time in the workplace. Always

look at the knowledge you gain and look at ways it can make you more efficient in what you do. Look for the shortcuts, the little tips and tricks that might just make that task easier. I provide an AutoCAD Tips and Tricks section on LinkedIn Learning for exactly this reason. It highlights all those lesser known functions and commands that make you that little bit more efficient with AutoCAD. If you can demonstrate efficiency with your learned knowledge, the perception of that knowledge is that it has value.



LinkedIn Learning - AutoCAD Tips and Tricks
<http://www.linkedin.com/learning>

ACCURACY

Learning and the associated knowledge gained will make you more accurate in all that you do. Especially in all things AutoCAD. Often, in an AutoCAD Essentials course, I will ask at the beginning of the course, which learners have used AutoCAD before and which haven't. As the course progresses, you will find that many self-taught users have not been using AutoCAD as accurately as they could have.

Object Snaps (**OSNAP**) in AutoCAD is a very common example of accuracy. Without it, you cannot snap to exact points; Endpoint, Midpoint, Center etc. Would you believe that I have seen full drawings created in AutoCAD without a single object snap being used? Scary, but true.

Learning teaches you accuracy. Quite often by getting you to repeat the exercise over and over. It brings about a common training phrase; repetition aids retention.

The more you do something, the more you remember how to do, but also with accuracy. An Olympic marksman will have shot at the same target hundreds of thousands of times, not only to build muscle memory but to build in **ACCURACY** to his learned knowledge.

By providing **ACCURACY** from your learning, you are also demonstrating perceived value. If you get it right, first time, every time and it's accurate, it's valuable.

VALUE (BOTTOM LINE)

In this section, I have discussed with you the **PERCEPTION** of your learned knowledge. To put it in simple terms, your employer has paid to send you on an AutoCAD course, paid the associated expenses, and lost you off chargeable work for three days. So, they have invested in you and now perceive what you have learnt as a valuable commodity. It comes out of their bottom line.

Their **PERCEPTION** is that your learned knowledge is also valuable, so make sure that you utilize that knowledge they have paid for, so they can see the **VALUE** associated with your newly gained knowledge.

Application

As you work further in to you career, your knowledge builds and you **APPLY** that knowledge to your workflow and processes to standardize and refine how you work, to make workflow simpler and more efficient, and to make sure you are working as profitably as you can.

IMPLEMENTATION

As your responsibility grows in a role, you are often placed in a position where your knowledge is at a level where you are expected to **IMPLEMENT** what you have learnt. This includes working processes that aid the organization. Typical examples include installation, deployment, network licenses and CAD management, just to name a few.

The level of knowledge you have here is management level. It builds up over time and there is no escape from it. The more you know, the more you learn, the more

responsibility is exacted upon you. And, trust me, you will **NEVER** stop learning either. A quote from Yoda sums it all up.

“Much to learn you still have...my old padawan.” ... “This is just the beginning!”

STANDARDS

As you learn over time, you realise that you cannot just create abstract designs on a whim. They must have **STANDARDIZATION** and conform to a known standard. Part of your learning will be knowing which standard to use; national, corporate, project, internal etc.

Wikipedia has a great link regarding CAD standards that I use in all my AutoCAD classroom courses. It explains the importance of AutoCAD layers and how they should adhere to standards, which is **FUNDAMENTAL** to learning AutoCAD.

[AEC \(Architecture Engineering and Construction\) standards](#) [edit]

CAD layer standards [edit]

Most common:

- **BS 1192**, which relies heavily on the *Code of Procedure for the Construction Industry*
- *AIA Cad Layer Guidelines*, 2nd edition (1997), has a great usage in the USA;
- *ISO 13567-1/3*, International standard, common in Northern Europe;
- *AEC (UK) 0*, an adaptation of BS-1192 based on Uniclass.
- *A/E/C CAD Standard, Tri-service (USACE/Air Force/NAVFAC) CAD standard created/maintained by the CAD/BIM Technology Center for Facilities, Infrastructure, and Environment.*^[1]
- *SIA 2014* (1996), Swiss standard for engineers and architects, based on ISO 13567.
- *ÖNORM A 6240-4* (2012), Austrian standard for digital documentation in technical drawings, based on ISO 13567.

Samples of standardised layers:

A-B374—E- (ISO13567: agent Architect, element Roof window in SIB, presentation graphic element);
A-37420-T2N01B113B23pro (ISO13567: agent Architect, element Roof Window in SIB, presentation Text#2, New part, floor 01, block B1, phase 1, projection 3D, scale 1:5(B), work package 23 and user definition "pro");
A-G25—D-R (ISO13567: agent Architect, element wall in Uniclass, presentation dimensions, status Existing to be removed);
A-G251-G-WallExtl-Fwd (AEC(UK): agent Architect, element External Wall in Uniclass, presentation graphic element, user definition "WallExtl" and view Forward);
A210_M_ExtWall (BS1192: agent Architect, element External Wall in SIB, presentation model, user definition "ExtWall");
A-E04—E- (ISO13567 SIA 2014: agent Architect, element Stair in SIA classification, presentation graphic element);
A-WALL-FULL (AIA: agent Architect, element Wall, Full height).

CAD standards for AutoCAD layers in Wikipedia
https://en.wikipedia.org/wiki/CAD_standards

Your standards and those associated standards you use that you have **LEARNT** over time build up your abilities and how you **APPLY** your knowledge to live, project work in your CAD environment.

Remember one little tip. If it is all the same, it is boring, according to my son when he was smaller. If it is all the same, it is **STANDARDIZED**. Trust me, boring is **GOOD**!

RETURN ON INVESTMENT (ROI)

You get to a point with your learning and your knowledge where you get a **RETURN ON INVESTMENT** or **ROI** as it is known. This is where the investment in your learning, both financially and in time spent learning, begins to pay off. Your intellectual worth becomes valuable. You are an expert in your field with knowledge that is in demand, either internally within your organization, or as a speaker, perhaps at AU.

To give you an idea of how long it takes to get that elusive **ROI**, there is a suggestion in the book “Outliers” by Malcolm Gladwell, that it takes 10,000 hours of practice to become ‘good’ at anything; CAD, driving, playing a guitar etc. He relates to the likes of Bill Gates of Microsoft and The Beatles and how successful they became after many hours of practice and learning. Now, this theory is often contested, and even Gladwell states that he wasn't suggesting anyone could become an expert in anything with 10,000 hours of work – just that a lot of time on top of natural ability was necessary for expertise.



The Beatles in their early career in Hamburg

So, that **ROI** will take time, and based on how **YOU** learn will depend on how quickly you become good at what you do and get a return on the investments you have made to learn.

Rounding off here

Over time, you will see that it becomes easier to **APPLY** your learned knowledge in the workplace and persuade others to let you apply that knowledge you have gained too. Sometimes, you must build a **REPUTATION** to apply that knowledge. It has taken me **EIGHTEEN** years to get to a point in my learning where I can now impart my knowledge to others in places such as here at AU. It all takes time.

Here's something to remember that was quoted to me many years ago by a CAD manager of a company I worked for, during a meeting where a budget was requested for AutoCAD training, and the request was rebuffed. The CAD manager replied: -

*"Sure, it would be bad if we paid for training and they left the company but imagine if we didn't pay for training and they **STAYED!**"*

4. Gain new knowledge that you could use to obtain professional qualifications, such as Autodesk Certification

At the beginning, I mentioned that you might be taking your Autodesk Certification examination here at AU. Now, I expect all of you taking those exams have worked hard to revise and read all about the exam content so that you have the best chance of passing the examination you have signed up for.

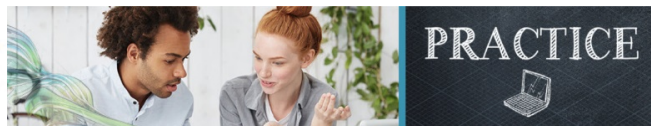
So, what new knowledge could you gain that you could use to obtain your Certification qualifications?

New knowledge

EXAM TECHNIQUE

Some people thrive on exam conditions. They love the pressure and perform well. Others don't, me included. I have never been a big exam fan, but a necessary requirement for your Certification is the exam, hosted by Certiport.

Certiport also offer practice exams to those who feel they need to practice. They are run by a company called GMetrix and offer a practice environment before you take your Certification examination.



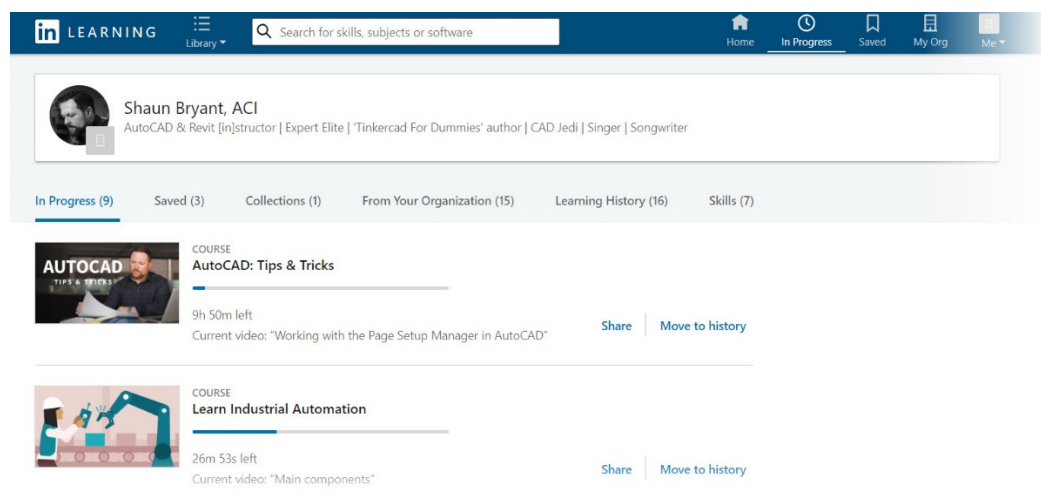
GMetrix offer practice Certification exams

<https://certiport.pearsonvue.com/Certifications/Autodesk/Certifications/Practice>

These practice exams allow you to build your **EXAM TECHNIQUE**, and your **CONFIDENCE** to a point where you feel you are ready to take that all-important Certification examination!

TIME MANAGEMENT

Managing your time as you learn is a great skill to have. In exam conditions, **TIME MANAGEMENT** is essential so that you can answer **ALL** the questions in the time given. It's not just in exams that you need to manage your time though. If you are using an online learning course to develop your knowledge (let's say LinkedIn Learning is the platform), you can use the tools they provide to manage your learning time. Set aside some lunch time each week to sit and watch a specific number of learning videos before going back to work. The tools are there for you. The LinkedIn Learning interface will remember your current course and where you were in that course. You can also save courses and build course collections that you can refer to, again saving time in searching, and making your time usage more efficient.



The LinkedIn Learning 'In Progress' page

Remember too, we have many devices we can **INTERFACE** with to manage our time. Use your smartphone to time your periods of learning, so that you don't overrun and miss an important meeting. Get a time management app, use the scheduling tool on your phone. There are so many apps out there that can help you do this. There's even **TIME MANAGEMENT** courses out there on LinkedIn Learning if you need them!

Rounding off here

As you become a more rounded and more learned individual, you will build up skills other than your CAD-related skillset, such as **EXAM TECHNIQUE** and **TIME MANAGEMENT**, as mentioned above.

You will find that sometimes it is not **WHAT** you know, but **WHO** you know that enables you. That person you know might be able to provide **YOU** with the knowledge you need. Don't try to be a jack-of-all-trades either. If you cannot perform a certain task, as it is outside of your knowledge skillset, find someone who **CAN**. There is no harm in hiring someone to perform a task you cannot do. Prime example, I used a plumber recently to fit a new bathroom basin. I could have done it myself, but I would have spent lots of time learning how to do it as I did it and I just did not have the time to do that. So, I employed a **WHO**, to do the **WHAT** and saved time, thus using my **TIME MANAGEMENT** skills.

Here's my takeaway from the above. You'll always be learning. Use that knowledge to your advantage, but you cannot do everything. As your learning takes you in to a managing role, learn to **DELEGATE** and **TRUST** those around you to perform that time-consuming tasks and give them **RESPONSIBILITY**.

They are **LEARNING** too, remember?

Thank you for attending my class!

My contact details are as follows: -

Shaun Bryant

Director – CADFMconsultants Limited, UK

Email: shaun.bryant@cadfmconsult.co.uk

Skype: shaunbryant

Cell: +44 (0)7951 945179

Web: www.cadfmconsult.co.uk

Twitter: @notjustcad

Instagram: notjustcad