

BRISTLECONE

SELF-PACED LEARNING



Introduction

Self-learning, or self-directed learning, is an essential skill required in 21st-century education. This learning approach increases the motivation of students to learn since they are the architects of their own learning journey. It helps them experience a sense of independence while making choices for their own future.

This process of study keeps students engaged, since knowledge acquisition must be done based on one's own ability and drive. Students must find solutions to problems, evolve in their learning and be encouraged to be life-long learners.

The concept of self-directed learning in educational technology, or edtech, helps differentiate between types of learning and changes the teacher-student dynamic in the classroom. New developments in 21st-century education, such as online learning opportunities and the availability of the internet on mobile devices, have put additional expectations on learners to take more initiative in their own learning. A major tool that allows for independent study is the OER (Open Educational Resources) tool.

Open Educational Resources⁵ are quality resources provided for learning, for free. Through these resources, students can learn any subject they want on their own, and the constant need for a teacher is eliminated. From OERs emerged what we now know to be self-paced learning.



What is Self-Paced Learning?

Any type of online learning that allows you to access, learn and complete a course in your own time, not restricted to the availability of an instructor, or specific time zones or days of the week, and will assess your learning and give you immediate feedback is a self-paced course or learning module. Therefore, self-paced learning is revolutionary in its offering of autonomy to the learner. Additionally, it is said that the self-paced learning approach gives people determining power over their learning materials.

In this type of learning, there is no teacher. You are both the teacher and the learner. The need for this type of learning comes from your own desire to get better.

There are very many popular learning mediums in the market that offer self-paced

learning courses or modules. In the corporate sector particularly, mandatory training like Information Security, Diversity and Code of Conduct has become increasingly self-paced. The education sector is now not far behind in incorporating self-paced learning in the sense that two learners viewing the same module will not be given the same set of questions.

By allowing them to create individual plans for studying and learning at their own tempo, the learner is taught to be accountable for their choice of study. In such a setting, learners do not feel the pressure to learn the module within a specified period of time, but rather master it at their convenience. The time span in which they achieve it is not limited and therefore allows for a more fluid, less restrained knowledge transference.

A tabular representation of self-paced vs. classroom learning is shown below:

SELF-PACED	CLASSROOM LEARNING
Flexible	Rigid
Autonomous	Group Classes
Cost-Effective	Expensive
Personalized	Instructor-Led

Self-Paced Learning Benefits

- **Digitized Learning**

Digitized learning has been around for some time now. However, the pandemic and post-pandemic era have pushed boundaries for learning content online. With restrictions to travel, geographical and time differences, the market offerings for self-paced learning have multiplied manifold.

- **Cost-Effective**

Once a course is made available, and has been tested on the target audience, the course can be updated per the feedback received. Therefore, it eliminates the need to keep recording courses. Furthermore, it is a more affordable medium of study by “eliminating the costs of printing, shipping and distributing physical materials.”¹

- **Impartiality**

The testing is computer-generated as the responses from the learner are entered into the module, thereby reducing errors and removing biases.

- **Anytime Access**

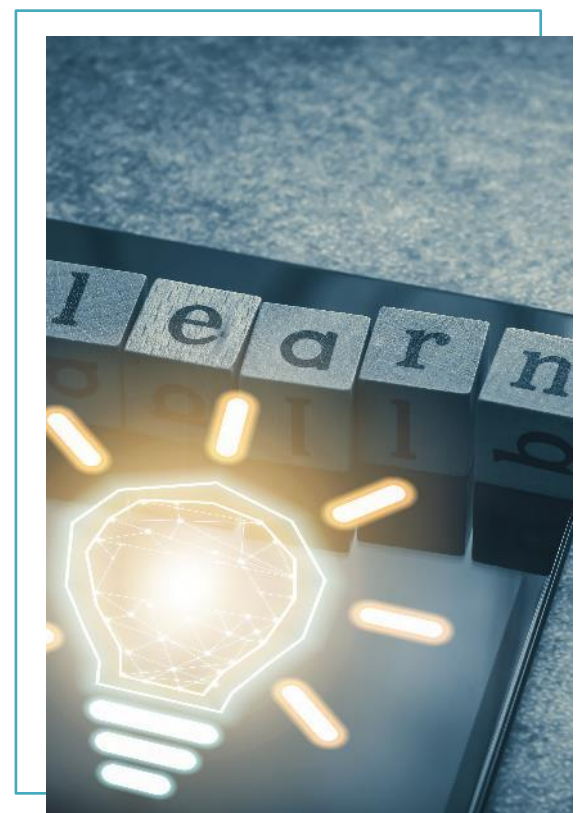
The awareness that a virtual support system of learners and instructors is ever-present to assist in one’s learning journey positively invites more collaboration.

- **Stress Reduction**

There is an ever-increasing trend of test anxiety in students. For introverts with more social anxiety, test performance anxiety can lead to lower test scores and lower overall educational performance. Self-paced learning ensures that learners can learn and retain information at times that they function best.

- **Flexible Capacities**

Learners no longer need to worry about applying after the enrollment capacity has been reached for the semester. Self-paced learning allows learners to join at any time, and therefore the concern about losing a semester’s worth of information for late enrollees has been minimized.





and the course completion day. This drives ownership and engagement. It also helps learners develop the skills they need to work autonomously and stick to a learning schedule restrained by no external factor.

- **Increased Knowledge Retention**

The fact that the course that interests you is offered outside your native state or country doesn't bear any restrictions anymore. Also, if you wish to learn from SMEs globally, self-paced module availability has brought knowledge from around the world to one's fingertips.

- **No Set Schedules**

Self-paced learning lets learners decide when they want to learn and how much they must complete at any given time.

- **Learn at Your Own Pace**

Students learn at their own speed during self-study, focusing more on subjects that interest them or those they understand better. This helps pupils deal with feelings of frustration, fear or boredom that they may experience within a classroom setting.

- **Develops Ownership**

The action of children taking responsibility for their own learning enables them to take control of their destiny, as they determine what they should do, when they should do it and how long they should study; or whether they should re-study at all.

- **Fair Testing Practices**

Since most self-paced learning modules allow for multiple-choice questions, there isn't a concern about instructor favoritism. If your answer matches the key entered in the module, you are scored accordingly.

- **Assisted Course Completion**

Instructors can always view the progress of each of their individual learners and send nudges or messages based on learner activity² to remind them of the pending course structure.

- **Flexibility and Autonomy**

The learner has more autonomy in terms of the course chosen, the pace followed

- **Clear Learning Insights**

With improved data insights, students who self-learn have more options to govern their learning. Learning Management Systems (LMS) have suitable features that allow students to keep track of their assessment performance through intelligent data displays and immediate test score notifications.

- **Increased Awareness**

Students who prefer online self-study are more self-aware as they are creating a new pattern for themselves, and not following a passive one set out for them. This may also increase their awareness when it comes to completing chores and taking care of other responsibilities.

- **Curiosity to Learn More**

Self-learning stimulates students' desire to learn new topics. They cultivate an eagerness to try new things, to see and solve problems from diverse angles, to want a change, and to enjoy learning.

- **Effective Learning**

Self-learners benefit from effective learning since they actively participate in whatever they are studying. This has more to do with an inner conscience that motivates people to take on greater responsibility by switching topics.

- **Learning Depth**

Self-driven learning arises from a personal desire and proves to be the most desirable form of learning.



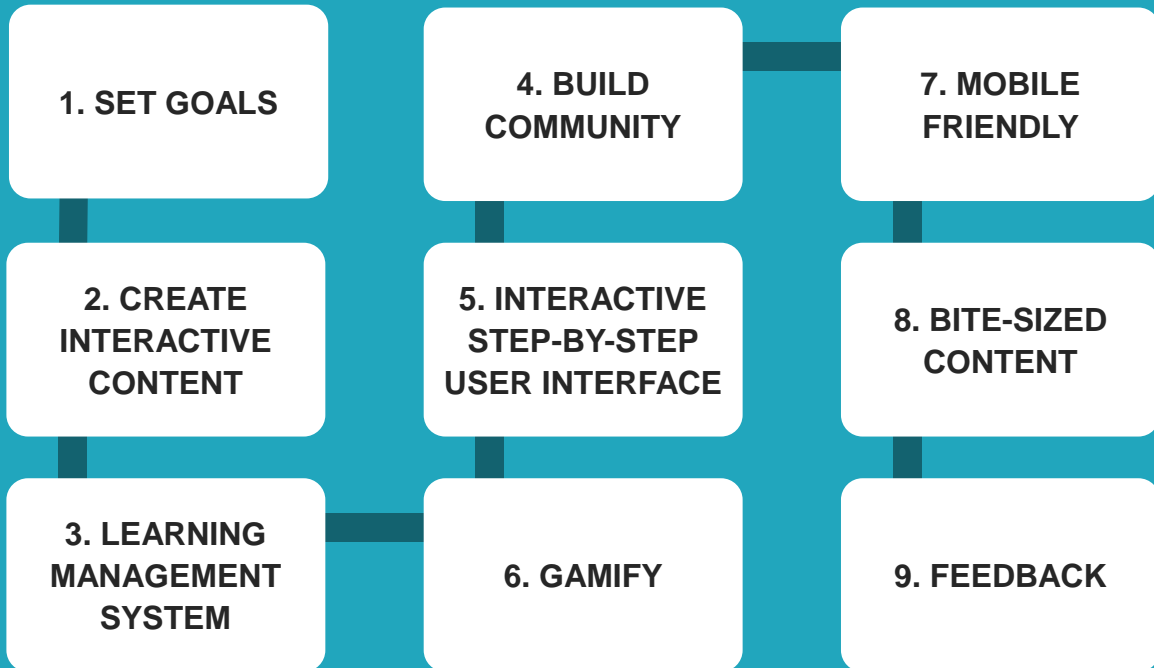
With self-paced learning, students have a clear purpose for what they want to get out of their learning and acquire deeper knowledge, making their learning more relevant and meaningful. With self-learning, learning is no longer a chore but a pleasure.

Because they learn individually and not in a group, self-paced learning gives everyone equal opportunities. If a student is a fast learner, they can finalize school assignments quicker and enjoy extra free time. On the other hand, if a student struggles with some material, they can take as much time as they need to master it. By doing that, they won't feel embarrassed because they are falling behind the rest of the class.

Overall, self-paced learning is:

- Ideal for employees juggling multiple commitments or seeking to upskill while working.¹
- Personalized – the learner can prioritize to give more time to tough concepts and move on from simple concepts faster.¹

Stages of Implementation (General)



1. Learning objectives and expectations
2. Interactive content – visual, auditory and kinaesthetic learners (audio / video / written)
3. LMS – content management, monitored progress, multimedia resources
4. Forums, peer connect
5. The learner knows how to use the platform without in-person assistance
6. Make learning more fun than one-dimensional
7. Ease of access equals more learning – less effort, more inclination
8. Micro-learning – a buzzword in e-learning and instructional design circles²
9. Maintains relevance, continuous improvement



The Workflow

Creating a workflow for e-learning development in a team is a collaborative process that involves coordinating efforts and ensuring that each team member's skills and responsibilities are aligned.

Here's how the workflow for e-learning development can be personalized within a team:

1. Begin with a project kick-off meeting to introduce the team, clarify roles and responsibilities and set goals and timelines.

Having a project initiation meeting is crucial as this sets the tone for the team to follow through on a common process. The segregation of roles is essential as this helps everyone know who to approach for what. It promotes a structural workflow by emphasizing the intended goal (e.g., creation of a self-paced learning course or module) and by when the output is expected. Mostly, the time provided allows for creation, feedback integration, etc., before the client administers the product.

2. Define the learning objectives and expected outcomes.

Every field is expansive and so are the course modules. However, what assists a content developer in creating a course is the learning outcome expected. For example, a 'cyber-security' course, once administered, results in more awareness in the organization's employees regarding the cyber-security issues surrounding them. Therefore, the course informs, instructs and educates the employee. This will eventually reduce the cyber-security threats that a company faces.

In this scenario, the developer is clear on who the course is intended for (audience) and the expected outcome.



3. Involve instructional designers and subject matter experts (SMEs) in gathering and analyzing learner needs and course requirements.

As with every course, there are multiple elements that need to come together in tandem to become an effective product. So, it's critical to have people who know the field (the SMEs) and people who are effective designers who come up with the best ways to go about something. In this case, that would be creating a learning module.

For example, in online courses, we see segregations such as *Beginner, Intermediate and Expert*. This is meant to indicate the proficiency that a person must have, prior to embarking on a course. Giving a more specific example, we can say that if you are creating a course for a 5th grader, but the product is created to suit an 8th grader, there could be a potential problem in terms of comprehension. That is why analyzing *learner needs* prior to the course is essential.



4. Work with instructional designers to create a course outline and structure.

Having a clear and concise outline is helpful as it reduces the chances of going outside the scope of work. If there is demarcation as to the number of parts in the modules, and effective placing of resources and quizzes, then the flow of learning can be made easy for the intended user to follow through on.

5. Designers and content developers create or gather multimedia elements, such as

images, videos and interactive components.

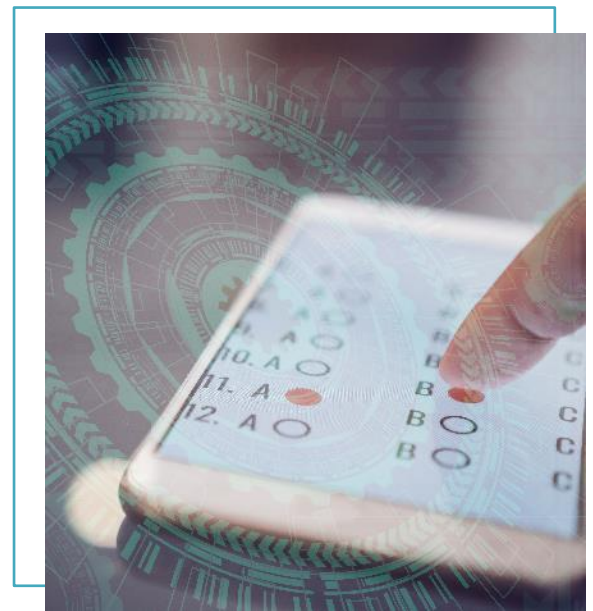
A learning module is an effective way to impart learning as it allows for the use of multimedia. As opposed to a course that only allows for an instructor-led teaching methodology, self-paced interactive modules allow for learner participation by engaging different senses. For example, for a learner who likes to retain information visually, images can be of great help. Or a learner who learns best by listening, the audio read-aloud feature may prove effective.

6. Use e-learning authoring tools to build the course.

There are many course authoring tools in the market. They offer features that help creators design courses aligned to their requirements. Of course, this list is not exhaustive and there are many more tools in the market that serve similar roles.

7. Have team members review the course for functionality, navigation and design consistency.

Once the course is built, there needs to be a setup wherein the team members take the tests themselves. This makes it easy to understand if the flow of learning is undisturbed, whether the interactive buttons work, and whether the course's learning objectives were accomplished. It's a much better process than handing over the course to the target audience, only to get negative reviews because the review step was missed.



8. Collaborate to make necessary revisions to the course content, media and interactivity.

Consistently keep in touch with all the team members and work together to produce the best quality product. For example, while taking the test you notice that a word has been mispronounced, so what you can do is collaborate with the person who provided you the audio recording and have the issue resolved. Then edit the relevant portion and add the new piece of audio with the correctly pronounced word. Re-take the course and see if the issue has been resolved.

9. Test the course within the LMS environment.

Now that the course has been created, it must be uploaded to the LMS platform. This way you see if the course design specifications have been met. LMS helps maintain the course in a way that reviews are recorded, the number of learners taking the course is noted and the progress of each learner is visible to the person who assigns the course along with the target user.



10. Gather feedback and collaborate on necessary adjustments.

At this stage, the first round of the course has been administered. It's time to gather the feedback, assess and make the course optimal. Sometimes, because the course creator is so involved in the course, they miss noticing minor factors that a third-party can bring to their notice. Engage in updating the course and learn the pointers to keep in mind before creating a similar course next time.

11. Collaborate on finalizing the course content and media elements.

Check that the course has not just the verbal content, but every other element has been placed in tandem and at the right place. As you may have noticed, it's important for the course to undergo multiple drafts before it gets final publishing approval.

12. Upload the course to the LMS or e-learning platform.

Re-publish the course to the LMS platform and check if all settings have been enabled before administering the course to the target audience.

13. Establish a collaborative process for regular maintenance and updates. Team members work together to keep the course current and effective.

This step helps keep the course relevant. For example, if you create a course in the year 2023, and you want to retain all settings except the year and particular events (e.g., new cyber-security threats) in the years to come, then you need to keep a check on updating the course each year, so it serves its purpose for a longer time. This saves time as opposed to the time that would be required to create a new course from scratch.

14. Encourage open, constructive feedback within the team to continuously improve the workflow and e-learning course.

It's best to keep transparency within the team at the optimal level. If you are sure that your teammates will always give you constructive criticism, it helps people be objective regarding the work. Then, there is more time to incorporate feedback and improve as a team.



Bristlecone's Implementation Method

We follow the **ADDIE** model (an acronym for Analysis, Design, Development, Implementation and Evaluation).

ADDIE is the most effective model when it comes to instructional design. Its relevance is highlighted in its effective usage since the 1970s when it was first developed. The ADDIE model is most accurate when used for creating learning and development training videos. It is a preferred resource for creating a structured learning module focused on a clear learning goal.



ADDIE Model

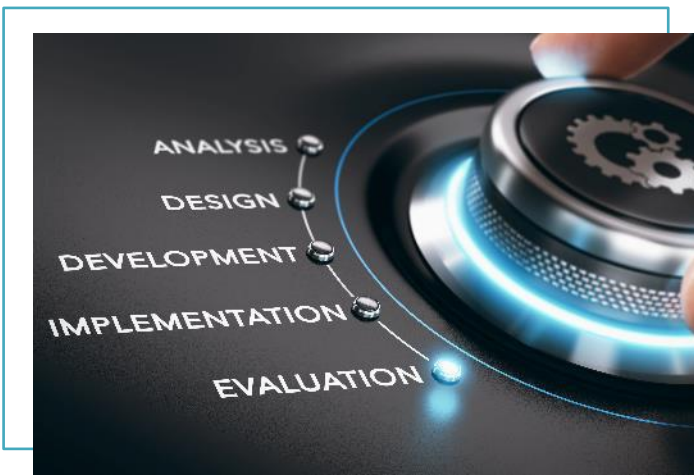
Let's look at a breakdown of the steps involved:

1. Analyze

The first step involves thinking about the problem or issue that needs resolution. The next thought is to see if an effective training program can help fix the issue. Simple questions, like why, what and how we are going to initiate the process, are central to this step.

A sub-step here is the TNA (Training Needs Analysis) process that helps understand the gap between the present set of skills and the expected skill output. This helps set the base for the training module.

The creation of user personas is essential in this phase as it helps determine the target audience that the course will be designed to reach and impact. At this stage, you set the training duration, budget, hours, training resources required, and more.



2. Design

This stage of development includes taking the learning from the previous analysis to form a learning plan and design. A draft or outline of the learning objectives for each lesson is created. The choice of delivery (online, offline, hybrid) is decided upon. An effective method for measuring the process is Kirkpatrick's model, which focuses on specifics like people's response to the training, the skills learned post-training, the behavioral changes noticed in the employees and how the training impacted the business goals. A prototype of the module is created for the benefit of the stakeholders.

3. Develop

This is the step in which the course material is built, based on the learning objectives determined earlier. The delivery method, multimedia and software usage are set at this stage. Once the course is created by our in-house experts, it is checked for grammatical errors and flow. This helps understand if the learner's user navigation is smooth and in line with the way the training material was intended to progress. A test run of the training module is done as a preview before it

is released for actual use. An effective communication strategy needs to be in place to reinforce the idea of completion of the course for the learners.

4. Implement

At this stage, the delivery of training material to learners is central. The designer must help within the course, in the format of FAQs or technical assistance in case the learner encounters any roadblocks.

The management of the training is essential in this case. The trainer needs to think about whether the training program is sufficient by itself or requires side programs to deepen the learner's grasp of the topic.

Now, the training is uploaded to a Learning Management System, which will effectively monitor enrollment, pass scores, collect feedback, reporting and more.

5. Evaluate

This final stage houses the pre- or post-assessments that will help the trainer understand the effectiveness of the course taken. It is a knowledge testing setup to determine how much the learner knew before completing the course versus how much knowledge they acquired after the course.

The team that created the course will now determine what went according to expectations and what didn't. This step helps fix the issues found this time around and make a better training module before the next session. The evaluation is to ascertain whether the learning objectives were effectively met.

Why ADDIE?

The ADDIE model can be adapted to suit different domains and industries. It allows for the incorporation of feedback at each step of the course development. Therefore, accomplishing the learning objective is a constantly evolving process.

Moreover, it allows the business to monitor the effectiveness of the course module for its employees.

Implementation of Self-Learning Process:

- Self-learning begins with a person taking the initiative, with or without the help of others.
- A person initiates self-thought on what they need to learn.
- It formulates learning goals and evaluates learning outcomes.
- Choice and implementation of effective learning strategies are carried out.



Bristlecone's Content Services Team

The team consists of SMEs delivering content-based services like:

1. Loading Educational Content for PreK-12 Learners
2. Report Card Creation
3. Video and Training Module Creation and LMS
4. Quality Assurance for Educational Content
5. Content Development

Resources:

1. <https://whatfix.com/blog/self-paced-learning/>
2. <https://www.digitallearninginstitute.com/what-is-self-paced-learning-definition-benefits-and-tips/>
3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7646484/#:~:text=Approximately%2025%E2%80%9340%25%20of%20US%20students%20suffer%20from%20test%20anxiety.&text=Many%20college%20students%20experience%20academic%2Drelated%20anxiety%20during%20their%20collegiate%20careers>
4. <https://www.ncbi.nlm.nih.gov/>
5. <https://www.edtechreview.in/elearning/oer-open-educational-resources/>
6. <https://www.aihr.com/blog/addie-model/>

AUTHOR



Athira TP

Specialist, Modern Engineering

Bristlecone is the leading provider of AI-powered application transformation services for the digital supply chain. We empower our customers with speed, visibility, automation and resiliency – to thrive on change. By combining our industry focus, supply chain expertise, consulting-driven approach and proprietary accelerators, we create unmatched business value.

Our transformative solutions in Digital Logistics, Cognitive Manufacturing, Autonomous Planning, Smart Procurement and Digitalization are positioned around key industry pillars and delivered through a comprehensive portfolio of services spanning digital strategy, design and build, and implementation across a range of technology platforms. We're the strategic partner of choice for your ongoing transformation journey.

Bristlecone is ranked among the top ten leaders in supply chain services by Gartner. We are headquartered in San Jose, California, with locations across North America, Europe and Asia, and over 2,800 consultants. Bristlecone is part of the \$19.4 billion [Mahindra Group](#).

Learn more at www.bristlecone.com.

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