In Tough Times, Effectiveness and Efficiency Count

The economy is just plain bad. Customers are harder to reach. They are less willing to spend. There is more competition. Overall, it’s harder to run a business. None of this is news any longer, it’s just reality.

What isn’t so clear is how to operate under such conditions. For many, the first instinct is to hunker down and wait things out. Others actually see difficult times as an opportunity to get a leg up on competitors and are investing accordingly. Regardless of the approach, an important aspect of operational strategy is employee work practices. Almost every organization is running leaner. Many people were let go as part of cost control measures. Hiring has been tight across the board. So organizations have to make do with the employees they have. In that light, organizational leaders must keep two things in mind: efficiency and effectiveness.

- Employees must be efficient in how they execute tasks. Many have so many responsibilities that they can ill afford to spend inordinate amounts of time on any one of them. They must be able to complete their tasks and move on.
- Yet it’s not just about getting the task done. Employees must also be effective in how they execute tasks, meaning that they must do the task well. Poor execution not only turns into needless repetition but also negatively impacts others downstream.

Ultimately, work practices affect how effective and efficient they are in a role. The quality of these practices directly impacts the productivity of the entire organization. Of course, practices can vary dramatically, some are good and some are bad. Organizations can invest in an effort to improve these practices. However, with cost controls often tight, organizational leaders face a difficult question: is such an investment worth it?

This whitepaper answers this question by looking closely at the following issues:

- The direct and hidden impacts of poor work practices
- The new delivery mechanisms and holistic structures of progressive training programs
- The return on investment equation for training programs
- The key characteristics of a good training provider
The Impact of Poor Work Practices

As mentioned previously, an employee’s work practices determine how effective and efficient they are in their tasks, which collectively determines an organization’s productivity. To begin to determine if an improvement effort is worth the investment, some analysis of the impact of poor practices is needed. We’ll look at some of the obvious and direct costs of such practices.

The Direct Impact

It likely comes as little surprise, but employees with poor work practices are the ones that experience the biggest setbacks. Poor work practices often result in the correction of errors and the recreation of data, which are costly both in terms of time and money. The following are a couple of examples of the direct impact of poor work practices from different applications:

• **Fixing or Recreating 3D Models due to Poor CAD Work practices**: Traditional CAD applications use parameters and features to progressively build the geometry of a 3D model. Each successive feature often references prior ones, creating a network of interdependencies. While powerful for automation and intelligent change, interdependencies can cause model failures if not built carefully. With poor work practices, employees risk inadvertently designing 3D models with such flaws. As a result, they often need to go back and fix or recreate the 3D model. Furthermore, such fragile models hinder collaborative and concurrent design efforts.

• **Recreating Designs due to Poor PDM Work practices**: PDM systems provide real benefits to individuals and organizations throughout the product lifecycle by tracking and managing the progression of their designs. They often have the capability to look into the design file and understand what other related files have been changed and, as a result, need to be tracked and managed. With poor work practices, employees avoid using the PDM system to manage their designs. As a result, only some of the design iterations are in the PDM system. When an employee needs to revert back to an earlier design, they can find it is not managed. As a result, they have to retrace their steps and recreate their work. This also affects the organization at large as engineers need to reference as well as track the progress of each other’s designs.

Of course, there are many more examples of the direct impact of poor work practices. However, the point is that the associated direct impact costs the individual and the organization time as they fix and recreate designs and deliverables. Ultimately, this affects an organization’s ability to release designs on time or the extra effort required to keep things on schedule.

The Hidden Impact

The direct impact of poor work practices may not be its most costly. Other, often hidden, impacts affect other downstream employees. These hidden impacts often manifest in larger problems, such as change orders, extra rounds of prototyping and testing as well as delays in product development processes. The following are examples of such hidden impacts involving different applications.
- **Propagating Errors due to Poor Modeling Work practices**: Employees working downstream from engineering increasingly use 3D models as the definition for other deliverables. Manufacturing uses them to design tooling and create toolpaths. Service planners use them to create service instructions. Procurement employees use them to generate sourcing documentation. If the 3D model has been created inaccurately or is failure-prone, the error will be propagated to the derived deliverable. The affected employees have to fix or recreate the model to avoid the disruption of their work or worse send the model back to the original employee, delaying the process even further.

- **Incorrect Decisions from Circumventing PLM Workflows**: Organizations often turn to workflow to automate business processes as well as enforce process compliance. Employees, however, can circumvent the new workflow-driven processes and revert back to the technologies and procedures used to drive old processes. This might be easier for the individual but it is dangerous for the organization. Key steps can be skipped and important roles can be excluded from weighing in. The result can be the wrong decision in the product development process.

These hidden impacts are often more widespread than the direct impact of poor work practices. Certainly, it takes more time for downstream employees to fix or recreate design data. However, the propagation of errors in the form of change orders, extra rounds of prototyping and testing, as well as making the wrong decision, carries real costs in terms of money. Such poor work practices can translate into tens or hundreds of thousands of dollars.
The Impact of a Training Program on Work Practices

Many recognize that good training can improve work practices but for many organizational leaders, the effect of training is difficult to define. This section addresses some of the changes in how training is delivered, how training programs are effectively structured, the return-on-investment associated with training programs as well as some guidance on how best to select a training partner.

The New Delivery Mechanisms of Progressive Training Programs

Many perceive training as involving a classroom setting, an instructor and a thick binder of exercises. Over the course of a week, the trainer leads the class through those exercises in order, alternating between communicating new concepts and then putting them into practice with the exercises.

Modern training programs have become far more progressive. They include the use of piecemeal shorter online training segments, the integration of guidance in the context of software applications and even the customization of training to use your organization’s product data. These new delivery mechanisms allow employees to access the right training at the right time through the right medium.

The Holistic Structure of Progressive Training Programs

In addition to changes in training content and delivery mechanisms, organizations are also thinking differently about how they strategically deploy and support technologies. This includes holistically approaching how employees become more efficient and effective in their roles. This was the subject of a whitepaper titled The Modern Guide for Technology Change, which described three major phases:

- **Preparing for Technology Change**: This includes setting the vision and organizational impact of the technology, communicating the personal impact of the technology and setting expectations for the change.
- **Delivering Technology Education**: This involves leveraging the right learning curriculum as well as the right medium for training content.
- **Continued Support of Technology Change**: This covers the delivery of the right content in a consumable manner, designating a mentor, and developing a peer network, as well as continued communications about the vision and benefits associated with the technology.

Of course, not all of these activities are required for continued or renewed support of technology. However, some aspects, especially regarding communications are applicable and especially contribute to the successful improvement of work practices.
The Return on Investment Equation for Training Programs

Understanding how an investment results in a financial return is important, but this is especially true during lean times. Budget spent on training is no exception. Here, we’ll explore some of the ways that training provides a justifiable financial return. It should come as no great surprise that the return on investment in training is associated with addressing the problems of poor work practices.

- **Increased Productivity**: Earlier in this whitepaper, we looked at the direct and hidden impact of poor work practices. Interestingly, many of those impacts result in fixing or recreating product data. Applying training programs can improve work practices and, thereby, reduce some percentage of that wasted time.

- **Avoiding Errors and Delay**: Likewise, as mentioned earlier in this whitepaper, there are broader issues associated with the hidden impact of poor work practices. Errors in product data as well as incorrect decisions can occur. The change orders, multiple additional rounds of prototyping and testing and other consequences have real costs associated with them, both in terms of time and money. Training programs that address the root cause of poor work practices translate into tangible returns on investment.

In both of the cases above, improving work practices through training programs can save time. As with any investment that can eliminate wasted time, the resulting return on investment depends on what the organization does with that recouped time. Some alternatives in terms of how to spend that recouped time are:

- **Better Products**: One option is to reinvest it into the development of the product. This can result in exploring more design alternatives, taking more enterprise considerations into account or working more closely with those in the supply chain. All of these activities can equate to lower product costs as well as higher performing products.

- **More Products**: Of course, instead of investing that recouped time back into refining products, organizations can develop more products. Ultimately, this can result in new revenue streams from additional opportunities that the company could never afford to invest in the past.

- **Shorter Development Cycles**: The other alternative is to not recoup the time at all. But instead accelerate the development cycle to launch the product to market more quickly or deliver it to the customer earlier. Time to market is critical for companies in specific industries. In other contract-based industries, delivering on a contract earlier translates into the ability to take on more contracts during a fiscal year, opening up the opportunity for revenue growth.
Key Characteristics of the Right Training Partner

Of course, not all training providers are the same. They vary quite dramatically. The following provides some explicit considerations about training providers to take into account:

- **Support of Global Operations**: Product development today truly is a global activity. That means the organization of the training partner should have a global presence and multi-language training content.

- **Delivery Mechanisms and Piecemeal Content**: The ability to provide training content that can be consumed in a piecemeal manner through a variety of delivery mechanisms is important to the continued or renewed support of better work practices. Ensure that these options are well understood before selecting a training provider.

- **Flexibility to Match the Organization’s Training Needs**: Over time, the required intensity of the training program for your organization will wax and wane. It will be important that your training provider can scale their services to match.

- **Integration of Training Content into Software Applications and Systems**: A number of the applications and systems used in product development can have training content embedded in them, allowing them to provide guidance in the context in which is needed.

As is the case with software providers, selecting a training program raises additional considerations that aren’t related to training program itself. The training provider should be a good *partner* as well. Consider:

- **Solvency of the Training Provider**: In the old model of training programs, employees attended classes and returned to work. Often, that’s where the relationship with the training provider ended. Today, however, employees will need continued access to training content. As such, the arrangement has changed from a one-off engagement to a continuous relationship. In that context, it is important that the training provider selected has a strong economic background to sustain long-term service.

- **Forging Long-Term Advisory Relationships**: The transition to an ongoing training model carries some other implications. Over time, the needs of the organization will change. As such, training should be tailored accordingly. It will be important to have a relationship with the training partner such that they understand the organization’s needs and can recommend the appropriate changes.
Conclusion

The reality for product development today is that almost every organization is running lean. As such, it’s critically important that every employee is efficient as well as effective in how they execute their tasks. An employee’s work practices affect how efficient and effective they are in a role.

Poor work practices have a dramatic impact on an organization’s ability to develop products in a timely and profitable manner. There is a direct impact of poor work practices, which force employees to recreate, or fix product data in non-value added activity. There is also a hidden impact of poor work practices, which can result in more change orders and redundant rounds of prototyping and testing which have more tangible costs in terms of time and money. In both cases, the individual and organization are detrimentally affected.

Training programs offer the means to improve work practices. However, progressive training programs don’t simply involve an instructor at the front of a classroom and hours of working through exercises. Instead, they utilize new delivery mechanisms for training content as well as a more holistic strategic plan for the continued or renewed support of technology and work practices.

Traditionally, the return on investment for training has been hard to calculate. However, as they negate the direct and hidden impact of poor work practices, training programs free up time, which enables organizations to produce more products, produce better products or offer a shorter path to product launch or delivery. Furthermore, they can provide more tangible gains in the form of fewer change orders and rounds of prototyping and testing.

Finally, organizations should seek out several characteristics out in a training provider, including: breadth of training content, delivery mechanisms and piecemeal content, flexibility to match the organization’s needs and integration of training content into software applications and systems. However, training providers should also be good partners in that they have long-term solvency and act as advisors to the organization’s needs.

Organizations will have to operate in a lean manner for the foreseeable future. Employee effectiveness and efficiency will factor prominently in the success or failure of many of those organizations. Training programs are proven tools to improve the work practices of those employees.

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