

The Situational Learning Matrix: a Design Tool for the Creation of Internet-based Learning Experiences

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Abstract

In this paper, I examine a taxonomy of internet-based learning materials and introduce The Situational Learning Matrix. The Situational Learning Matrix considers students' goals for engaging with online educational materials versus the motivations of producers of those materials. I further discuss goal misalignment as a possible reason for failure of an online educational experience and provide an inventory of computer-based interactional and instructional objects.

Introduction

Online learning takes on a wide variety of forms, and the number of learning opportunities available is continuously increasing. Museums are putting worksheets for students and tutorials for their visitors on the web. Government agencies are transferring guidelines and tests online. Corporate organizations are uploading their training materials onto the Internet. Educational institutions are making their courses available to their online students. Such a large collection of learning opportunities developed for different ages, in various formats, and with different purposes makes it possible, in theory, to customize learning to fit individuals' learning goals. "Simply put, people can learn more efficiently through e-learning—in large part because it makes learning more personalized and more accessible" (Commission on Technology and Adult Learning, 2001, p. 11). But what makes one computer-based instruction successful while others fail? What constitutes a successful learning opportunity on the web? Who defines success? The answer to these questions lies partially in the goal alignment of students and educational designers. This paper focuses on how to approach educational goal alignment on the Internet.

The Internet as an Educational Medium

The Internet is now an important medium for the delivery of educational content, and its influence in this area is likely to substantially increase in the future. The Internet allows for a much wider variety of learners to access educational materials than just traditional classroom students. And these educational materials themselves are exceptionally diverse and likely to vary widely in their effectiveness and quality. Many institutions, educators, governments, and researchers are rushing to embrace this new medium (Bjarnason et al., 2001; Commission on Technology and Adult Learning, 2001; Fisher, 2001; Schank, 2001; Web-based Education Commission, 2000). “We believe that the Internet, if used to engage learners in meaningful learning, has the potential to transform education” (Jonassen et al., 2003, p. 32).

There are multiple forms of web-based educational materials and multiple ways of accessing them. An individual can research a particular topic, take a class, or just browse for latest news. To better understand the differences and benefits of various online learning opportunities, be they university courses or one-time tutorials, it is necessary to create a classification system based on some broad set of learning and instructional criteria.

Reading an online news article is usually a shorter duration activity than taking an Internet-based class. Duration of a learning activity can be used as a metric of an online learning object taxonomy, but it provides just a limited view into the usefulness, usability, and quality of such objects. An individual looking to find a correct format of a business letter might not be willing to take a semester-long course in business writing. So while duration of a learning activity is an important variable, it is more productive to examine online learning opportunities by the types of activities individuals are asked to engage in there, by what students hope to achieve through those activities (students’ goals and expectations), and by who are the authors of those materials and what were their purposes for creating them.

In general, students’ educational goals and the types of educational settings that provide the instruction are the important variables in the design of the curriculum structure for any learning opportunity (e.g., a book, a course, a trade school demonstration). These variables are perhaps even more important for online learning, where students and education providers might never have any personal contact and might find it difficult to fathom each other’s motivations. Student goals and educational settings (each designed and developed for a particular purpose and audience) can be combined to form a two-dimensional situational learning matrix.

		Learner's Goals (1-7)						
		Necessity			Fun			
		Certification/Degree	Necessary Idiosyncratic Work	Personal Fun Idiosyncratic Enrichment	Games	Hobby	Learning Situation (A-E)	
School		1:A	2:A	3:A	4:A	5:A	6:A	7:A
Corporate Training		1:B	2:B	3:B	4:B	5:B	6:B	7:B
Just-in-time Learning		1:C	2:C	3:C	4:C	5:C	6:C	7:C
Entertainment		1:D	2:D	3:D	4:D	5:D	6:D	7:D
Information/News		1:E	2:E	3:E	4:E	5:E	6:E	7:E

Figure 1: *The Situational Learning Matrix.*

So what are the different types of online learning settings? Individuals seeking education on the Internet can find formal instructional settings, explicitly designed as online learning destinations. These Internet-based courses offer extended and generally more in-depth educational opportunities. Some mirror traditional classrooms, but some are uniquely suited for the Internet delivery.

Internet-based courses are obviously not the only form of online learning. Online research and its sub-component *just-in-time* learning provide learners with the opportunity to investigate a particular topic via multiple sources. Jonassen et al. (2002, p. 26) wrote, “Intentional information searching requires at least a four-step process: (a) plan; (b) use strategies to search the Web; (c) evaluate; and (d) triangulate sources.” Planning, selecting and using appropriate search strategies, evaluation, and triangulation (looking for multiple sources of the same information) are all metacognitive tools. Thus, online research is clearly a form of learning, and online research tools are, in fact, learning tools. And the Internet is full of searchable informational reservoirs. These sites store large numbers of educationally valuable articles. Each site has a particular focus, depending on its explicit statements of purpose. These are online newspapers, magazines, books, and community sites, all of which can be roughly divided into information/news-type sources and entertainment-type sources. The web search engines index these information reservoirs to help individuals find relevant data.

Web search activities can be parsed into two distinct types: (a) a web research that usually involves a complex topic (perhaps ill-defined), is of a long duration, and generates a list of sources for review; (b) and a just-in-time learning activity which is usually of a short duration and which provides an answer to a very specific (well-defined) question (e.g., What is the order of the colors in a rainbow?).

The Situational Learning Matrix

It is critical to match the needs and goals of students with those of online instruction. Adult students already seek out educational opportunities that best fit them. Young students pick high schools and colleges that can satisfy their economic, social, and academic needs. This is also true of students looking for an education on the Internet. By specifying the students' goals and the format of instruction in this way, online learning objects can be better matched to students.

Research and online courses are forms of Internet-based educational materials which can further be deconstructed into different sub-types of online learning situations. These sub-types—school, corporate training, just-in-time learning, entertainment, and information/news—form the vertical axis shown in Figure: *The Situational Learning Matrix*. Each of these sub-types is discussed below.

School. I start the discussion of Internet-based learning environments with online courses offered by universities. It is convenient for these large institutions to expand access to their curriculum via the Internet. And there are clear benefits: these courses become available to students from different universities; the geographical location of the school in relation to the student becomes irrelevant; and more students can get access to a particularly gifted teacher via the Internet (Fisher, 2001). Similar considerations apply to online high schools. Examples of such programs are Stanford University's online masters degree in electrical engineering, Penn's PennAdvance program, and Duke University Fuqua School of Business's Global Executive MBA (with 80% online course work). The web sites, listed in order, are: <http://scpd.stanford.edu/ce/telecom/onlinedegree.html> , <http://www.advance.upenn.edu> , and <http://www.fuqua.duke.edu/admin/gemba> .

There are also universities which cater to professionals. For example, e-Cornell offers hotel management and labor relations courses (<http://www.ecornell.com>); and NYUonline offers management and finance classes (<http://www.nyuonline.com>). Both schools use their name brand to distinguish themselves from competition and sell their educational wares (Fisher, 2001).

Some universities offer mini-courses. In 2000, Princeton, Stanford, Yale, and Oxford partnered to form the University Alliance for Life-Long Learning. And Columbia University formed Columbia Interactive Arts and Sciences program (<http://www.as.columbia.edu>) and now offers online courses in IT training and business writing (Fisher, 2001). These schools' initial goal was to provide continuing education for their life-long learning alumni.

Online schools are learning environments that inherited their educational structure from a real world, physical, brick and mortar counterparts. They usually feature courses, homework, and assessment as part of some overall goal such as a degree. To this end, online schools may utilize any educational structures such as video/multimedia presentations, BBSs, immersive environments, email communication, conferencing, chat rooms, and so.

Corporate training. The second type of online learning environment is corporate training. This is a special case of web-based courses. Not only do large corporations need their employees to learn new skills as they become relevant at the work place, but people interested in career advancement are clearly a target audience for online corporate training opportunities (Kruse & Keil, 2000). Corporate training is different from online courses offered by universities. Corporate, for profit educational centers that deliver IT skills are a reflection of dissatisfaction of adult students and businesses with traditional university programs. These corporate education providers focus on flexibility, content, and level of service as a way to differentiate themselves from traditional programs. They deliver tailor-made learning experiences (Bjarnason et al., 2001).

Corporate training is a learning opportunity created by an employer or sold to a company or a professional group as a means of training its employees or members. To this end, corporate training may utilize any educational structure deliverable to its students. Assessment is an important feature of corporate training. Ownership of educational results is not necessarily obvious. In some cases, employers have full access to learners' records and consider them corporate property. Bjarnason, Davies, Farrington, Fielden, Garrett, Lund, Middlehurst, and Schofield (2001, p. 34) concluded, "In the longer term our view is that the majority of continuing professional development is likely to become virtual, and if existing providers do not respond, may develop as an almost entirely private sector activity."

Just-in-time learning. As discussed previously, just-in-time learning is another form of Internet-based learning opportunity. Just-in-time learning encompasses all forms of learning that have a goal of getting information fast and for a very narrowly defined purpose. These are small *chunks* of information that can be absorbed by individuals as the need comes up: How do you make play dough? What causes low tide? What is the complementary color for red? These are examples of questions that just-in-time learning can answer. There is a very wide range of applications for this type of learning—everything from helping with homework to cooking to solving a work-related problem. And companies like Google compete to deliver answers to just-in-time information seekers.

Entertainment. The third type of online learning opportunity is recreational. Some people learn for fun, and there are companies that cater to them. The format of these learning materials is very different from that of corporate training courses. These people learn for entertainment, and if they are not having fun, then the materials targeted to this audience are not well designed.

Some informational sites available on the web are there just for fun or are used that way by most of its users. The Internet Movie Database web site (<http://www.IMDB.com>) is one such example. It provides information on movies and the people who starred in or worked on them. It's rarely the case that an individual outside of the movie industry needs this information other than for entertainment purposes (although examples to the contrary can certainly be made).

Similarly, there is a wide variety of activities and games that people play over the Internet. Some

of these activities provide educational benefits to the users. For example, Sudoku math puzzles are sometimes extremely difficult logic activities that might take many hours to solve. In doing these puzzles, individuals learn not only the rules of logical analysis, but pattern recognition, group theory, and the benefits of a good notation system. While these puzzles are clearly educational, most Sudoku devotees do them for fun. <http://www.number-logic.com> is a site that caters to individuals looking for entertainment. Sudoku puzzles can also be used in a school math curriculum. But students forced to solve these puzzles as part of their school exercises might not share enthusiasm for such activities and see them as work rather than fun.

Information/news as educational resources. Informational sources like online newspapers and journals are also educational. These settings are very clearly different from schools or training environments. News sites, magazine sites, and other periodic information sources provide topical information on a wide variety of subjects, especially current events, financial news, science and health, sports and culture. People use these sources throughout their lives to stay connected to their communities and to make important personal and civic decisions based on the information they learn.

To summarize, the online educational resources can be broadly divided into five broad categories: schools, corporate training, just-in-time learning opportunities, entertainment sources, and information/news sites. Each of these can be further specified by analyzing the types of content they serve and the audiences they serve. Appendix gives examples of these different categories of Internet-based educational opportunities.

What all of these online educational opportunities have in common is the directional focus of the curriculum design. Content creators and publishers develop their materials for a particular purpose. These corporations carefully craft their business plans and corporate mission statements to describe the types of educational opportunities that they plan to offer. These companies (publishers, universities, training schools, etc.) then market their educational opportunities to carefully defined audiences. And while some individuals might have goals that differ from those of the creators and distributors, the majority of users will hopefully have their goals aligned with the intentions of the education providers.

Producers of Online Educational Materials

An online learning system can encompass many different subject areas and cater to a variety of students. Finn (1988, cited in Bjarnason et al., 2001) speculated that the higher education providers (adult education, collage and above) can be split into three broad categories: *brand-names*, *mass-providers*, and *convenience institutions*. Finn wrote the following:

The 'brand name' institutions are—and will continue to be—selective in relation to student entry, engage extensively in research, and will include a number of

traditional campus-based providers. ‘Mass-providers’ are characterized as primarily teaching institutions which award relatively traditional degrees—many of which may be part-time—as well as a wide range of professional and technical programmes. ‘Convenience’ institutions is a general term describing a large range of public institutions (e.g. community colleges in the USA) and the new private providers, indeed incorporating almost everyone who can provide community-based credit bearing programmes in whatever form. (cited in Bjarnason et al., 2001, p. 38)

How an institution thinks of itself (brand-name, mass-provider, or convenience) and of its students will affect its ultimate educational offerings. All educational content creators and publishers develop their materials with a particular goal in mind and for a particular audience. Thus, the position of the learning opportunity in the Situational Learning Matrix can help guide the focus of instructional design.

The reciprocal is also true—how students think of the education providers (brand-name, mass-provider, or convenience) will reflect in their choice of online instruction. For those individuals who value not only the quality of instruction but also its brand, the institutions with high prestige will win out over those with similar quality but less recognizable brand name. As with other commodities, brand has value.

Motivation

Student motivation to learn is closely tied to their goals for learning. A student taking a required English class as part of their first year college curriculum has different attitude toward writing than a professional writer attending a creative writing workshop. Thus understanding the reasons for student participation is an essential part of instructional design.

In the early days of the Internet-based learning, producers of online educational materials and courses didn’t pay attention to student motivation as an important component of curriculum design. As the result, there were quite a few disappointments both among students and among the online learning providers. Columbia University started its foray into online education with semester-long courses in Greek and Roman Mythology, charging \$414 per class (Pethokoukis, 2002). But there weren’t many people interested in investing that much time and money for those subjects, and Columbia’s Greek and Roman Mythology courses were soon canceled. After this initial failure, Columbia University developed a series of ten-week-long, business-oriented classes, at \$50 per course. “It helps when you offer classes that students actually care about,” pointed out Gary Bisbee, a Lehman Brothers analyst (Pethokoukis, 2002).

The Situational Learning Matrix was developed to help understand student motivation in relation to educational setting, thus aiding the curriculum design process. Once the goals

of the students taking the class are understood, appropriate instructional strategies that help raise student motivation can be built into the structure of the course. Such strategies would vary based on both the goals of the course and on the students taking the course.

Individual (or group) motivation can be examined by analyzing the scope of work, the time available to do that required amount of work, and the individual's (or group's) interest in the project (the greater the interest, the higher the motivation). Instructional design has to take into account all of the above constraints to create a successful learning situation/object. So for example, if work can't be accomplished in a given time, then no amount of individual motivation will get it done—the structural instructional design parameters of the project are flawed.

Taxonomy of Learning Goals from the Situational Learning Matrix

While the vertical axis in the Situational Learning Matrix explores the differences in the educational settings, the horizontal dimension deals with the student's attitude toward instruction. There are learners that are learning for fun. These people learn to pursue their passions, and their goals are very different from students that *have* to learn something. Those second type of learners are interested in degrees or are required to learn by the companies they work for (e.g., university degrees and corporate training certificates programs). These differences are responsible for the emotional predisposition of the learners, their attitudes toward education, and their motivation to learn.

Goals driven by necessity: Pursuit of a degree or certification. A learning situation where one of the overall goals for education is a degree or certification. Attaining a degree or a certificate tends to be extremely important to the learner and has life-changing implications (e.g., obtaining licence to practice medicine upon finishing medical school). In this circumstance, the brand of online learning materials has value to the potential student.

Goals driven by necessity: Work-related learning goal. A learning goal may be imposed from the outside. A learner might be required to undergo training as part of a job, to keep a job, or to get a promotion. A learner may also be interested in advancing their skills for a work-related improvement.

Goals driven by necessity: Idiosyncratic learning goal. Not all necessary forms of learning are imposed by a desire for a degree or professional advancement. Sometimes, education is necessary due to the idiosyncratic circumstances of the learner. For example, illness may create the need for medical research on available treatments. Or the need for a house refinance may require an individual to learn about lenders and their policies. The learners' goals in these circumstances are driven by necessity. In both examples, the types of education sought by hypothetical learners are longer in duration and more extensive than that covered by the just-in-time learning opportunities. They also carry graver implications for the learners (health and financial stability).

Goals driven by fun or pleasure: Idiosyncratic learning goal. Individuals read for pleasure, learn foreign languages just for the challenge, joyfully take up a musical instrument, and solve mathematical puzzles just for the sheer thrill of solving them correctly (<http://www.mathpuzzle.com>). In other words, some people learn just for fun. “Idiosyncratic activities should have special relevance for education because personal ownership and fit with a child’s life bring great power to learning” (diSessa, 2002, p. 104). This is clearly true of adults as well. What is fun and what is not is a personal preference, but the attitude toward fun projects is very different from necessary ones. For example, some people enjoy researching companies and making decisions on whether to purchase or sell their stocks—they play the stockmarket. Others couldn’t be paid to do this kind of work. For those who think of this as fun, the Global Stock Game (<http://investsmart.coe.uga.edu/C001759/stocksquest/mystocks.htm>) provides an opportunity to play for free using virtual money. And it is not a coincidence that this game is developed by the University of Georgia and is used by students to improve their investment skills. My eleven-year-old son loves this game.

Goals driven by fun or pleasure: Personal enrichment learning goal. Learning for personal enrichment is a large category. We all have areas of interest on which we enjoy spending our leisure time. We all have a unique collection of expertise. It includes keeping up with current events by studying the latest news articles. It also includes following one’s passions by reading books, attending lectures and presentations, watching movies and documentaries, or looking up interesting facts. The goal for learning in these situations is to have a good time.

Goals driven by fun or pleasure: Gaming as a learning goal. A game can be a powerful motive to learn. Computer-based adventure games have fanatical followers who invest a major portion of their free time to play and learn how to play their games of choice better. This is not a new development. Card-based games have always had a large following and still do today. There are many Internet-based learning environments that support gamers.

Goals driven by fun or pleasure: Hobby as a learning goal. In Webster’s Encyclopedic Unabridged Dictionary of the English Language (1996, p. 909), hobby is defined as “an activity or interest pursued for pleasure or relaxation and not as a main occupation.” There are situations where the distinction between a hobby and a game is blurred. Chess is one such example.

Summary

Online learning materials can be analyzed by (a) their position in the Situational Learning Matrix (see Figure), (b) the goals of potential students, and (c) the incentives of the producers creating those learning materials. If the goals of the students are not aligned with the goals of instruction providers, the resulting learning materials tend to fail their audience in their objectives. When goals of the student and instruction are aligned, student’s motivation for doing the work is clear—it fulfills student’s goals. To sustain motivation, instructional designers have to develop appropriate

learning structures (e.g., learning games, science fairs, theater projects, etc.). Instructional design that can create and sustain student enthusiasm for hard work is difficult. Internet-based education has even more challenges than a traditional classroom because there are many alternatives, and because personal connections between teachers and students and among peers are more difficult. Again, goal alignment is part of the solution to generate and improve student motivation to learn. Once it is determined that the goals of the students and the intention of the producers are appropriately aligned, instructional design can focus on creating learning materials.

Finally, as with any other instructional design situation, the development of online learning materials is constrained by budgetary limitations and resources of its producers, by the available time, and by the expertise of its designers. In the case of online learning, technology is another constraining factor, both for the producers and for the prospective students.

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Appendix: The Situational Learning Matrix

		Learner's Goals (1-7)							Learning Situation (A-E)
		Necessary Idiosyncratic Work Certification/Degree			Personal Enrichment Fun Idiosyncratic Games Hobby				
School		1:A	2:A	3:A	4:A	5:A	6:A	7:A	
Corporate Training		1:B	2:B	3:B	4:B	5:B	6:B	7:B	
Just-in-time Learning		1:C	2:C	3:C	4:C	5:C	6:C	7:C	
Entertainment		1:D	2:D	3:D	4:D	5:D	6:D	7:D	
Information/News		1:E	2:E	3:E	4:E	5:E	6:E	7:E	
		Necessity			Fun				

School

The matrix position (1:A) describes a learning situation where learners' goals are defined by pursuits of degrees or certifications and schools are the instructional environments. When an individual wants to earn a certification or a degree in a school situation, the goals of that learner are very much aligned with the goals of the online educational program. There are multiple examples of this type scenario.

The matrix position (2:A) describes a learning situation where learners' goals are motivated by work and schools are the instructional environments. An employer can conditionally hire an individual, making additional school education part of that contract. Many companies pay for school or require additional courses for their employees.

The matrix position (3:A) describes a learning situation where learners' goals are based on necessary idiosyncratic motives and schools are the instructional environments. Attending school for idiosyncratic reasons (like better employment) is a very common practice. In fact, most high schools, colleges, and postgraduate schools are these types of learning situations. And while learning in a school can be fun, most students attend them because they feel they have to.

The matrix position (4:A) describes a learning situation where learners' goals have fun idiosyncratic motives and schools are the instructional environments. Schools are also attended for fun. An individual interested in making a movie (a big project) would probably be interested in attending a film school (or do course work in this area). Another example is an art school

offering classes to artists. Most adult art students attend art schools for recreation and passion.

The matrix position (5:A) describes a learning situation where learners' goals are motivated by personal enrichment and schools are the instructional environments. Many schools offer classes for personal enrichment. Individuals who take these classes are different from those trying to earn a degree. This category is reserved for people who take classes for fun because they think the subject matter is interesting (e.g. wine tasting class). And unlike students who are trying to get a degree, these individuals care less about their grades and more about the quality of the educational experience.

The matrix position (6:A) describes a learning situation where learners' goals are motivated by the games they play and schools are the instructional environments. There are many educational games designed to teach a wide range of subject areas. And these games are important tools for educators. In this category, the learner's goal is to have fun and play games in a school setting.

The matrix position (7:A) describes a learning situation where learners' goals are based on their hobbies and schools are the instructional environments. As the American population ages, more and more individuals reach the time in their lives when they are free to pursue educational goals that are mainly hobbies. These learners are not trying to get better jobs, but might want to become better cooks—attending a culinary academy is an example of going to school as a hobby.

Corporate Training

The matrix position (1:B) describes a learning situation where individuals' goals are defined by pursuits of degrees or certifications and instructional environments provide corporate training. A corporate training course required as part of degree or certification program falls in this category. A good example is California MCLE courses for lawyers.

The matrix position (2:B) describes a learning situation where learners' goals are motivated by work and instructional environments provide corporate training. Corporate training courses are sometimes required by the place of employment: e.g., a company decides to convert to a new operating system, and all employees are required to attend classes that teach basic proficiency in the new system.

The matrix position (3:B) describes a learning situation where learners' goals are based on necessary idiosyncratic motives and instructional environments provide corporate training. The most salient example of corporate training taken for necessary idiosyncratic reasons is a medical situation affecting the family of an individual or an individual personally. A hospital might be offering a training program on the use of a dialysis machine, for example.

The matrix position (4:B) describes a learning situation where learners' goals have fun idiosyncratic motives and instructional environments provide corporate training. An example of such situation is an individual taking a course in database development to create a personal

movie database project. Another example is a project-based organization that requires its members to have certain expertise to participate—think Green Peace. Green Peace is a large non-profit entity with voluntary members dedicated to its ideals. Corporate training in Civics, Constitutional Rights, Accounting, Marine Biology, First Aid are all examples of the possible educational requirements asked by this organization of its members.

The matrix position (5:B) describes a learning situation where learners' goals are motivated by personal enrichment and instructional environments provide corporate training. An example of corporate training for personal enrichment is a company providing a corporate training course on investment strategies and an employee who attends this course in hopes of improving personal stock portfolio (this is personal enrichment in a true sense of that word).

The matrix position (6:B) describes a learning situation where learners' goals are motivated by the games they play and instructional environments provide corporate training. Corporate training as a game is a strange category. But one can imagine a situation in which an individual "collects" courses as one would collect orchids. While this idea is far fetched, it's not totally out of the question. Another example is an investment strategy course to support an imaginary portfolio (www.stocktrak3.com).

The matrix position (7:B) describes a learning situation where learners' goals are based on their hobbies and instructional environments provide corporate training. An example of a corporate training taken as a hobby is a company sponsoring seminars in digital photography and photo-manipulation and an employee who attends the course because she hopes to improve her skills as an amateur photographer. Pixar, an animation company which developed movies like "Toy Story" and "Finding Nemo," is now offering in-house classes for its employees in cartooning and animation techniques, as well as a slew of other creative, corporate-culture building courses. You don't have to be an animator to attend. These courses are popular with secretaries and receptionists as well.

Just-in-time Learning

The matrix position (1:C) describes a learning situation where learners' goals are defined by pursuits of degrees or certifications set within just-in-time learning instructional environments. A learner trying to get a degree or a certification might seek just-in-time learning educational delivery system to help with homework.

The matrix position (2:C) describes a learning situation where learners' goals are motivated by work set within just-in-time learning instructional environments. Similarly, an employee might need help with a project at work and turn to just-in-time learning for required information.

The matrix position (3:C) describes a learning situation where learners' goals are based on necessary idiosyncratic motives set within just-in-time learning instructional environments.

Learning specific information covered on a DMV Driver's Test is an example of just-in-time learning for personal and necessary reasons. Other examples of just-in-time learning for necessary personal reasons are medical information, civic instruction, geographic directions, etc.

The matrix position (4:C) describes a learning situation where learners' goals have fun idiosyncratic motives set within just-in-time learning instructional environments. Researching a cooking recipe is an example of just-in-time learning for a fun project (making dessert).

The matrix position (5:C) describes a learning situation where learners' goals are motivated by personal enrichment set within just-in-time learning instructional environments. Any form of informational look up for personal enrichment is part of just-in-time learning. You forgot the name of an author? What was the date of Spanish American War? What is the 97th element in the Periodic Table of Elements? Why is the sky blue?

The matrix position (6:C) describes a learning situation where learners' goals are motivated by the games they play set within just-in-time learning instructional environments. The Internet is valuable resource to gamers. There are many hint and cheat sites available for people who are stuck or want to get a better score in a game. This is an example of just-in-time learning where the motivation for the learner is an improvement in a game play.

The matrix position (7:C) describes a learning situation where learners' goals are based on their hobbies set within just-in-time learning instructional environments. Looking up a stitch pattern is a form of just-in-time learning for a sewing enthusiast (hobbyist).

Entertainment

The matrix position (1:D) describes a learning situation where learners' goals are defined by pursuits of degrees or certifications and where entertainment serves as an instructional environment. Flying and scuba diving schools are examples of entertainment-oriented educational settings where the goal of the learner is a certification in addition to the mastery of the subject area.

The matrix position (2:D) describes a learning situation where learners' goals are motivated by work and where entertainment serves as an instructional environment. An obvious example of an entertainment-oriented work environment is the entertainment industry. It could very easily be part of one's work description to learn about the trends in the pop culture through web-based portals that provide information about games, music, movies, books, etc.

The matrix position (3:D) describes a learning situation where learners' goals are based on necessary idiosyncratic motives and where entertainment serves as an instructional environment. A parent sifting through online recreational offerings to insure the safety of a child is an example of a situation in which an individual is compelled to learn for personal reasons from a recreational setting.

The matrix position (4:D) describes a learning situation where learners' goals have fun idiosyncratic motives and where entertainment serves as an instructional environment. A school fashion show is a project that might require learning about the current designs in personal apparel from web sites dedicated to this subject matter. The main purpose of those sites is recreation.

The matrix position (5:D) describes a learning situation where learners' goals are motivated by personal enrichment and where entertainment serves as an instructional environment. Trade journals provide a mixture of news and entertainment to an industry insiders. And while some individuals might feel compelled to follow them, most read them for pleasure and personal enrichment. An example is www.starwars.com. This site provides news about the Star Wars movies and features articles on special effects used in these movies.

The matrix position (6:D) describes a learning situation where learners' goals are motivated by the games they play and where entertainment serves as an instructional environment. Gamers are commonly attracted to entertainment web sites. The key in this example is to find educational value. Fortunately, even web sites and games that don't have a goal of teaching, can provide unexpected educational benefits. Consider gambling. The games of chance played for money demonstrate the need for mathematical prowess. Gamers who understand statistics do better. Expert gamblers learn math perhaps even despite themselves.

The matrix position (7:D) describes a learning situation where learners' goals are based on their hobbies and where entertainment serves as an instructional environment. A weekend, hobby chef looking through Home and Garden web site for menu ideas is a classic example of entertainment site serving as an educational venue for a hobbyist.

Information/News

The matrix position (1:E) describes a learning situation where learners' goals are defined by pursuits of degrees or certifications and informational and news sources serve as instructional environments. Journalism students are required to study current events. They are an example of a group of learners in pursuit of a degree, while online newspapers and magazines serve as their topical educational materials.

The matrix position (2:E) describes a learning situation where learners' goals are motivated by work and informational and news sources serve as instructional environments. This is a very large category. Staying on top of business news is part of a job description for many professions. Even an educational researcher has to keep current by reading periodicals and research papers in their areas of expertise.

The matrix position (3:E) describes a learning situation where learners' goals are based on necessary idiosyncratic motives and informational and news sources serve as instructional environments. Some individuals are compelled to study news or informational archives for reasons unrelated

to their school work or employment. A medical condition is again a prime example—staying on top of cancer research, a patient has better access to information on clinical studies and drug interactions. This information also makes a person feel more in control of their treatment.

The matrix position (4:E) describes a learning situation where learners' goals have fun idiosyncratic motives and informational and news sources serve as instructional environments. A school newspaper is an educational project that requires students to read, analyze, and personalize the news to their fellow school mates.

The matrix position (5:E) describes a learning situation where learners' goals are motivated by personal enrichment and informational and news sources serve as instructional environments. Most people read the news because they enjoy it and because it makes them feel part of the community they live in (neighborhood, city, state, country, etc.).

The matrix position (6:E) describes a learning situation where learners' goals are motivated by the games they play and informational and news sources serve as instructional environments. There is a world-wide game that asks its participants to predict the deaths of famous individuals in the upcoming year—the younger and the more famous the individual, the higher the score. Players scan news sources for information about their selections. Sometimes an obscure article can relate information about the health of a young celebrity. This knowledge can be very valuable in making final selections for the game. And while the players of this “death” game have a strange goal for reading the news, they none the less can learn a great deal.

The matrix position (7:E) describes a learning situation where learners' goals are based on their hobbies and informational and news sources serve as instructional environments. The Internet is full of informational content about thousands of topics. If there is a hobby that intrigues even a relatively small number of individuals, the web provides a forum for their passion and disseminates information within that group.