

Ambient Insight Comprehensive Report

The US Market for Mobile Learning Products and Services: 2010-2015 Forecast and Analysis

*Market Enters Value Creation Phase: Strong
Demand for Advanced Features Driving Innovation*



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This is a Comprehensive Report. Ambient Insight has five types of syndicated market research reports:

Comprehensive Reports are 50-65 page reports that provide detailed analyses and revenue forecasts for content, content services, technology services, and technology for a specific product type and break the revenue out by multiple buyer types and segments.

Targeted Reports are 25-40 page reports that identify buying behavior in a specific buyer segment, isolate revenue opportunities and forecast revenues for a particular product type, or pinpoint revenues for a specific sub-category of content, service, or technology.

Research Briefs are 20-35 page competitive intelligence reports that provide global or regional analyses, industry-wide analyses, trend analyses, supply chain analyses, or an analysis of the competitive landscape.

Revenue Snapshots are 2-3 page reports that include a single revenue forecast table from a current market report. Please review the free Executive Overview for each report for a list of available tables. Contact us at info@ambientinsight.com to request a specific Revenue Snapshot.

Radar Reports are 5-10 page reports that identify leading indicators, emerging products, new buyers, promising markets, novel business models, and untapped revenue opportunities for suppliers. These reports provide recommendations on how to monetize learning technology innovations, create new customers, generate new revenue streams, and compete in emerging markets.

Executive Overview

The US market for Mobile Learning products and services reached \$958.7 million in 2010. The five-year compound annual growth rate (CAGR) is 13.7% and revenues will reach \$1.82 billion by 2015.

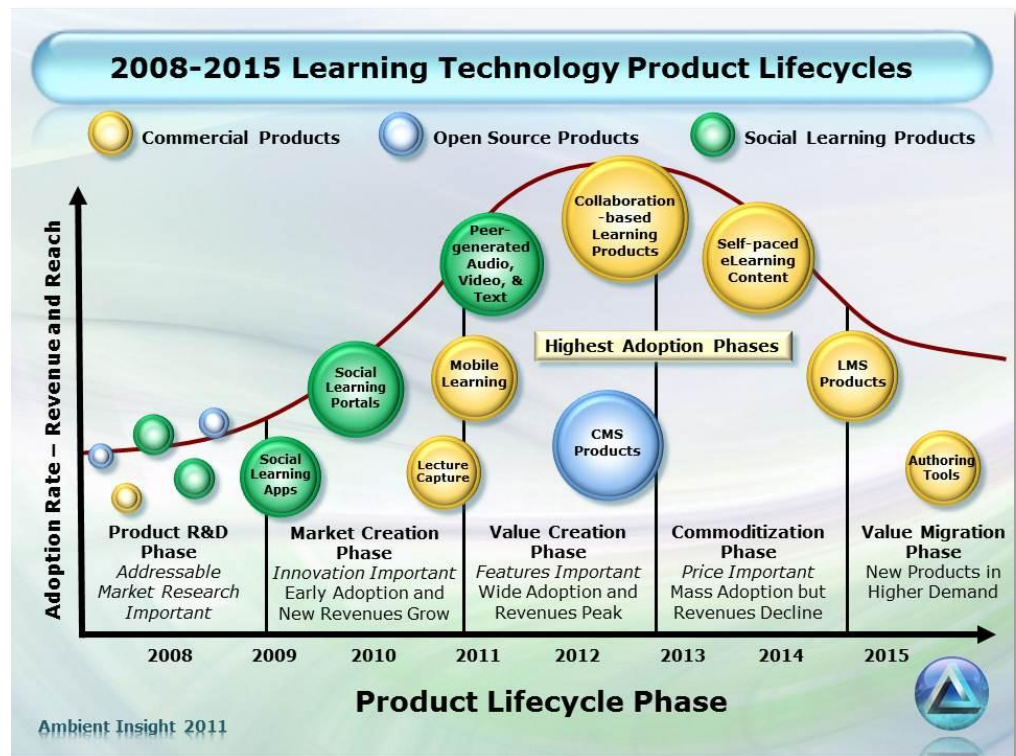
Due to favorable market conditions, Ambient Insight has revised our US Mobile Learning revenue forecasts upward compared to our previous forecasts. In particular, we have revised the consumer, corporate, and healthcare forecasts significantly upward.

The US is now the top buying country of Mobile Learning, followed by Japan, South Korea, the UK, and Taiwan. Combined, these five countries accounted for 69.8% of the total 2010 global Mobile Learning market. This dynamic is changing fast. By 2015, these five countries will only account for 40.6% of all expenditures. The highest growth rates are in China, India, Indonesia, and Brazil. By the end of the forecast period, China will be the second largest buying country after the US. **(Source: The Worldwide Market for Mobile Learning Products and Services: 2010-2015 Forecast and Analysis, Ambient Insight, LLC.)**

The current US Mobile Learning market offers clear long-term revenue opportunities for suppliers. We provide a detailed quantitative forecast and analysis of the US market that includes competitive intelligence, demand-side analysis, supply-side analysis, leading indicators, business model trends, market inhibitors, and market catalysts.

The most significant catalyst in the current market is the wide adoption of Mobile Learning across all eight of the buyer segments tracked by Ambient Insight.

Figure 1 - 2008-2015 Learning Technology Product Lifecycles



As a product type, Mobile Learning has exited the "market creation" phase and has entered the "value creation" phase of the product lifecycle. The value creation phase is characterized innovation and by wide adoption enabled by expanding distribution channels.

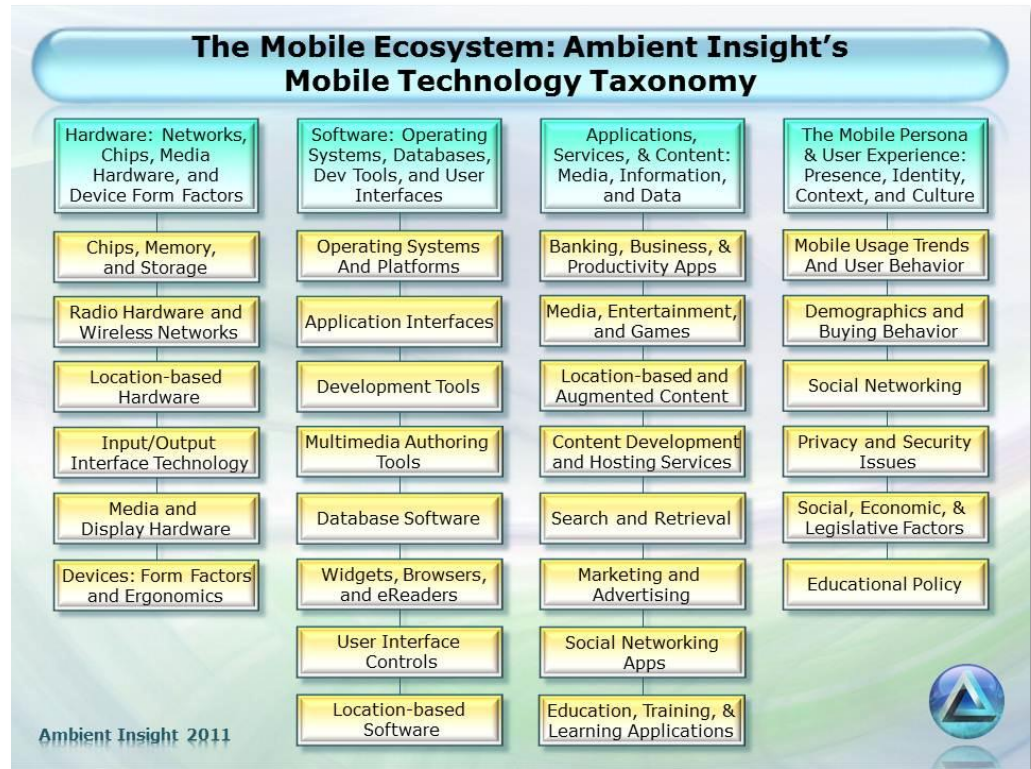
Advanced features are now important to buyers and suppliers are responding with extraordinary innovations such as location-based learning, mobile augmented reality, haptic-enabled learning, intelligent decision support, and "smart" personal learning appliances.

The most sophisticated products are being marketed to military, first responder, and healthcare buyers. The US military is investing heavily now in developing advanced Mobile Learning products. They are actively seeking the participation of commercial suppliers.

Mobile Learning is now recognized as an integral component of the rapidly growing international mHealth industry. The more sophisticated educational mHealth products evolve around educational apps for children with disabilities and handheld decision support designed for clinical personnel.

The innovation coming out of the US federal government is now a major catalyst for the overall Mobile Learning market.

Figure 2 – Ambient Insight's Mobile Technology Taxonomy



Mobile Learning in the US is now part of a vibrant mobile ecosystem that includes relatively sophisticated advances in wireless broadband, mobile device technology, mobile commerce, near field communications (NFC), mobile advertising, mobile web browsing, handheld gaming, device-independent multimedia, location-based services, ebooks, and, of course, mobile apps.

The demand-side analysis in this report forecasts the five-year expenditures for Mobile Learning products and services in eight US buying segments: consumer, corporate, federal government, state and local government, PreK-12 academic, higher education, non-profits and associations, and healthcare.

The demand and the revenues for specific types of Mobile Learning products and services are different in each buying segment.

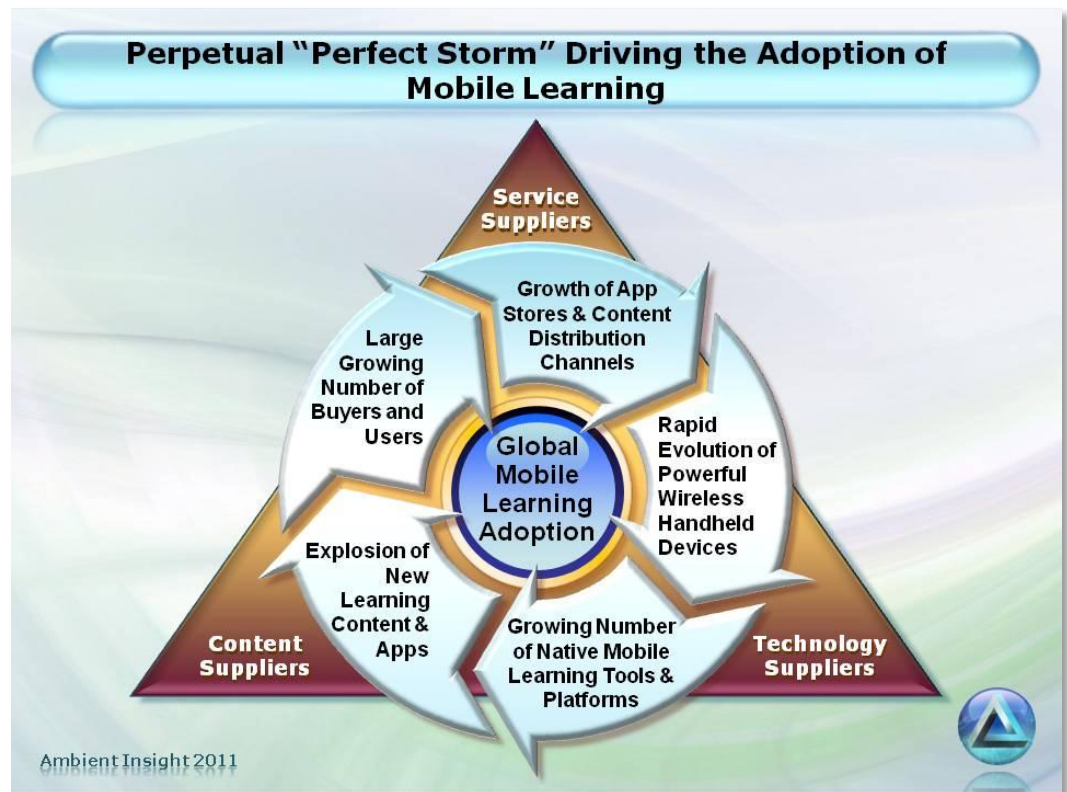
The supply-side analysis in this report forecasts the expenditures for three major categories of Mobile Learning:

- **Packaged Applications and Content** - broken out by twelve major content types
- **Services** - including custom content development, Location-based Learning services, and software-sold-as-a-service (SaaS)
- **Technology** - including development tools, device-embedded learning, and installed platforms

The Perpetual Perfect Storm

There are several major catalysts that are accelerating and will continue to accelerate the adoption of Mobile Learning across the various buying segments. These catalysts are contributing to a "perfect storm" of market conditions that are sustaining a very favorable business climate for Mobile Learning suppliers.

Figure 3 – Perfect Storm Driving the Adoption of Mobile Learning



Ambient Insight has been using the perfect storm metaphor since 2006 to describe the US Mobile Learning market. We now see the storm lasting for the foreseeable future and it has become "perpetual."

Clearly the market conditions are favorable for creative Mobile Learning suppliers. There are distinct and lucrative revenue opportunities in the market. Yet, the competition is now intense and suppliers need to understand the complex dynamics of a product in a value creation phase.

The Buyer Demographic is Growing

There is a large and growing buyer demographic using a variety of Internet-connected handheld computing devices. In terms of revenue, consumers, healthcare, and federal government agencies (particularly military agencies) will dominate the market over the forecast period, followed by corporate buyers.

Consumer and healthcare buyers were early adopters, and in terms of revenue, dominate the market throughout the forecast period. The buying behavior is dramatically different in these two segments and a detailed analysis of both is provided in this report.

Corporations have been late adopters of Mobile Learning until recently. The growth rate in the corporate segment is now a healthy 29.3%, the highest out of all eight segments analyzed in this report. This is up from 24.9% in the previous forecast period. While the growth rate is high, the corporation segment is still lagging in terms of revenues. They are the sixth largest buying segment in the 2010 market. By 2015, they will be the fourth largest buying segment.

A recent development is the launch of cross-platform internal app stores in the corporate segment, effectively opening the market to a vast untapped demographic. Deploying the app store model as a distribution method removes many of the roadblocks that have impeded the adoption of Mobile Learning in the corporate segment such as installation, cross-platform support, role-based provisioning, compliance, and most importantly, security.

IBM, Google, Sap, Kraft, Pepsi, and Accenture now have internal app stores stocked with commercial content and apps developed in house. Apple offers an enterprise license to organizational buyers allowing them to host their own iTunes app store behind the firewall.

The second highest growth rate (26.1%) for Mobile Learning is in the NGO, non-profit, and association segment. Ambient Insight has revised our forecasts upward in this segment due to the recent spike in the demand for custom mobile educational content from charities and the new demand for location-based learning in the exhibition and tourist industries.

The Content Distribution Channel is Expanding Rapidly

Applications are now sold in a growing number of commercial "app stores." As of February 2011, there were over a hundred app stores across the

On average, across all the app, ebook, and audiobook stores, at least 15-17% of all titles are Mobile Learning apps.

planet and the number is growing by 1-2 stores a month. There are now global mass-market stores operated by GetJar, Amazon, and Opera.

The Amazon and Opera stores were launched in early 2011 and they will both disrupt the market, albeit in different ways. Amazon launched with Android apps, but plans to expand to other operating systems. Amazon has a vast customer base and "retail" is in their DNA. The Opera store is unique in that "the front door" is embedded in their cross-platform mobile browser which is used by over 100 million people worldwide.

Device manufacturers and operating system vendors operate proprietary app stores that cater to specific devices and dozens of independent app resellers sell content across all the major platforms. There are hundreds of online ebook and audiobook stores with a significant percentage of educational titles.

There are over 650 telecom operators on the planet and there are now "white-label" app store platforms that allow them to launch branded pre-stocked app stores quickly. The new carrier and device maker initiative called the Wholesale Applications Community (WAC) launched a commercial development platform in February 2011. IBM, Oracle, Accenture, Ericsson, and Telefonica launched white label services based on WAC at the same time.

China Mobile, MTS, Orange, Smart, Telefonica, Telenor, Verizon, and Vodafone launched their own WAC stores in February 2011 with over 12,000 apps. These new WAC stores open up the Mobile Learning market to feature phones (sometimes called "dumbphones"), which still make up 72% of the US market.

Appia (formerly PocketGear), operates their own retail app stores, but also operates over 40 third-party stores including Opera, Samsung, Verizon, AT&T, RIM, and T-Mobile. In February 2011, they launched their white label service allowing software companies, carriers, and device makers to launch branded stores pre-stocked with over 140,000 apps. PocketGear acquired Handango in early 2010. At the time of the acquisition, according to Handango, Mobile Learning accounted for 18% of all of Handango's retail sales.

The majority of app stores have dedicated education categories. Google, Apple, and Blackberry have education categories. Of the major vendors, only Microsoft's store does not have an education category.

In mid-2010, Apple launched a bulk buying method for academic buyers. This now makes it possible for schools to buy content in volume at discounted rates. This removes a major impediment that has been slowing adoption in the PreK-12 segment.

In October 2010, Apple introduced a new Special Education section in their app store. At launch it had 85 apps in five categories: communication, hearing, language development, literacy and learning, and organization. This expands the reach of Mobile Learning to over 5 million school children

in the US that need specialized content to mitigate cognitive or physical impairments.

The Networks are Getting Faster and the Devices are Getting Smarter

There was a spike in the sales of smartphones, ebook readers, and tablets in 2010. It should also be noted that in 2010, Nintendo sold 8.5 million DS devices in the US. In 2011, the market will be flooded with new handheld devices, with several designed exclusively for education.

This report includes the forecasts for Mobile Learning products developed for several types of handheld devices including:

- Dedicated gaming devices (e.g., the Nintendo DS or Sony PSP)
- Personal media players (PMPs)
- Personal digital assistants (PDAs)
- Handheld tablets and slates
- Mobile internet devices (MIDs)
- Mobile clinical assistants
- Handheld eReaders
- Devices designed solely for learning and performance support
- Mobile phones (feature phones and smartphones)

The distinction between these devices is blurring due to a high rate of convergence. Non-connected PDAs have been fading from the market for the last two years and are being replaced by connected smartphone-PDA hybrids. Dedicated gaming devices, personal media players, personal learning devices, tablets, and smartphones now have Internet connectivity, ebook features, and GPS functionality.

Dedicated ebook readers like the Nook from Barnes & Noble now have browsers, apps, email, and the Flash Player, essentially functioning as tablets. T-Mobile sells Android devices pre-loaded with the Blio eReader software. Blio has a "built-in" bookstore in the software.

These new devices are evolving very fast relative to cost, user interface, display technology, processing speed, peripherals, on-board memory, internal storage, motion sensors, and wireless broadband connectivity.

As of 2010, 28% of all phones in use in the US were smartphones. By early 2012, 34% of all phones used in the US will be smartphones. There is a great deal of convergence occurring now and basic feature phones are getting "smarter" and smartphones are getting cheaper (albeit slowly). However, there will always be a demand for very cheap "dumbphones" and Ambient Insight expects the adoption of smartphones to peak at 70-75% during the forecast period.

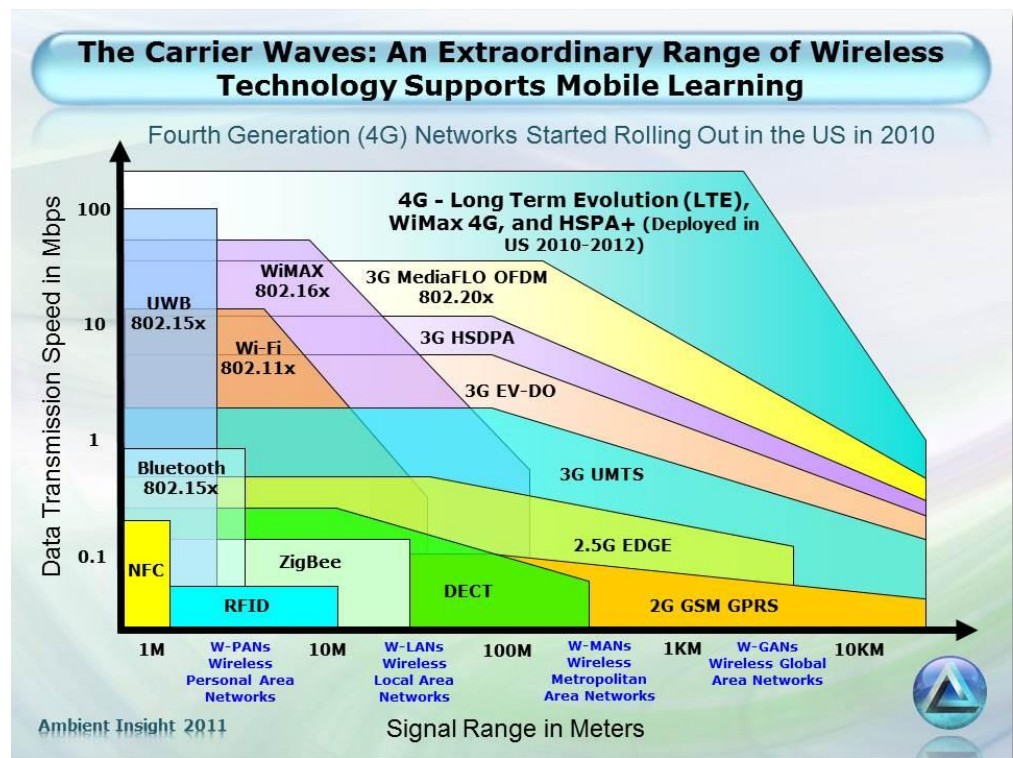
So-called 4G (fourth generation) wireless networks started rolling out in the US in late 2010. Once considered a laggard in wireless broadband, the US is now taking the lead in 4G network deployment.

Mobile devices not only enable learning content consumption, but also learning content capture (photos, videos, sensor data, etc.) and creation (geotagging, location-based annotation, etc.).

It is true that the Scandinavian countries - Sweden, Norway, and Finland - were the first countries to launch 4G networks in late 2009, but the US started launching 4G **at the same time** South Korea (Korea Telecom) and Japan (NTT DoCoMo) began rolling out their 4G networks. SK Telecom, South Korea's largest operator, won't roll out 4G until the 3rd quarter of 2011. As of March 2011, 4G networks had yet to be rolled out in Singapore or anywhere in Western Europe.

The US has six 4G networks in operation today: AT&T, MetroPCS, Clearwire, Sprint, T-Mobile, and Verizon. These initial rollouts are heavily concentrated in densely-populated areas. The operators will expand into less-populated areas once they saturate the largest markets.

Figure 4 – The Carrier Waves: An Extraordinary Range of Wireless Technology Supports Mobile Learning



A new company called LightSquared intends to roll out a wholesale satellite-based wireless broadband service to smaller regional carriers, device makers, and retailers across the US in early 2012. Best Buy is one of their first customers and will start selling 4G subscriptions in 2012.

LightSquared's LTE-based network is "combined with one of the largest commercial satellites ever launched, **to provide coverage of the entire United States.**" They launched their satellite in November 2010. "LightSquared's SkyTerra 1 satellite features a 22-meter L-band reflector-based antenna -- the largest commercial antenna reflector to be put into service."

By the end of 2012, the US will reach coverage parity with South Korea and Japan. This is not just because of aggressive expansion of coverage into rural areas by the operators, but also due to a significant amount of federal funds that are now being used to roll out wireless broadband (particularly WiMax) in rural and tribal areas of the US.

The US Department of Agriculture's Rural Utilities Service (RUS) has distributed more than \$2.6 billion in broadband grants and loans through the American Recovery and Reinvestment Act (ARRA). The agency indicates that, "The grants and loans will enable telemedicine and distance learning and allow farmers and ranchers to get up-to-the-minute information on weather and commodity prices."

By the end of the forecast period, the US will have the largest 4G coverage in the world. The LightSquared network alone will cover 92% of the US by 2015.

Very powerful devices designed for the 4G networks hit the market in March 2011. In early 2011, dual core processors were available to device makers. By the end of 2011, there will be devices on the market running on quad core processors.

The main advantages of multiple cores are increased processing speed and better battery life. For example, Qualcomm's new processors provide speeds of up to 2.5 gigahertz per core, which they claim is a 150% performance improvement over older processors. Qualcomm's new processors use up to 65% less power than the older processors.

In 2010 and 2011, tablet device makers launched products specifically designed for learning. They tend to target specific demographics, particularly early childhood, PreK-12, or higher education. Device-embedded learning products designed for young children are heavily concentrated in the consumer and PreK-3 segments.

In early 2010, Marvell announced their new \$99.00 "Moby" tablet device. In early 2011, they stated that, "We expect 2011 to be the year that ushers in profoundly new offerings of rich Internet tablet designs supporting the e-Learning and healthcare markets. As a commitment to that belief, Marvell created a fund to support the development of e-Learning software and applications for children all over the world."

New devices with 3D displays hit the market in early 2011. Nintendo's new 3DS sports three cameras and comes preloaded with augmented reality games. GRilli3D's plastic overlay for iOS devices allows 3D viewing without specialized hardware. LG launched the world's first 3D phone in February 2011. In March 2011, Hasbro released their MY3D hardware peripheral that turns iOS devices into 3D viewers. They launched with 3D games, including a virtual tour of Los Angeles.

New Tools and Platforms Hit the Market

New types of Mobile Learning development tools and delivery platforms continue to come on the market including highly-specialized tools designed

In May 2010, the One Laptop per Child (OLPC) organization stopped production of their proprietary XO-3 and announced that they would adopt the Marvell device. OLPC intends to release the Marvell-based OLPC device in mid-2011.

to create and manage location-based learning, educational augmented reality, edugames, social learning, interactive exam preparation, and simulation-based learning.

In 2009 and 2010, dozens of native tools and platforms emerged on the market. Suppliers are marketing tools and technologies designed from the ground up to develop and manage Mobile Learning. Examples include products from Media-X, SageMilk, Emantras, Irynsoft, Blackboard, Spaced Education, Achieve Labs, TATE, Alion, and Alelo (to name a few.) A detailed forecast analysis of these new tools and platforms is provided in this report.

The use of HTML5 tools for Mobile Learning mitigates the multiple-device dilemma faced by content developers trying to market products across several device operating systems. Of the major device platforms including iOS, RIM, Android, Symbian, and Windows Phone 7, no operating system has more than a total of 8% share (across all phones including feature phones) in the US. This makes it very difficult for developers to reach large numbers of users unless they invest in creating and supporting apps for each device. HTML5 is now positioned to solve this problem.

By the end of 2011, all of the major mobile web browsers will support HTML5. Rapid learning tool suppliers began supporting HTML5 in 2010 and 2011. For example, the following authoring tools now support HTML5: Digitec Interactive's Direct-to-WEB, Rapid Intake's mLearning Studio, Trivantis' Lectora Inspire, dominKnow Learning Systems' Claro, and Harbinger Group 's Raptivity. In March 2011, Adobe released an "experimental" tool called Wallaby that converts Flash (FLA) files to HTML5.

The emergence of mainstream mobile location-based and augmented reality tools, browsers, and platforms in 2009 and 2010, (such as Unifeye, Hoppala Augmentation, Toura, Argon, Layar, SCVNGR, and junaio) has accelerated the demand for location-based learning content and services.

One of the most fascinating trends to emerge in the current market is the emergence of location-based and augmented reality applications that not only target a user's location in space, **but also in time**. There are apps on the market that allow a user to go back in time decades or even hundreds of years and see what cities looked like in various periods of the past. Users point their device cameras at a ruin or archeological site and see what the structures looked like when they were first built. These apps also target the future. Architects and developers now use augmented reality to see how future architecture will look in context of a particular location.

The demand for augmented reality has attracted the attention of the major competitors. In July 2010, Qualcomm announced their new free "vision-based" augmented reality platform. Their platform uses image detection instead of GPS to identify objects in the real world that can be augmented with virtual elements. They are currently offering the beta for free to encourage developers to build more applications, but also to sell more phones equipped with the Qualcomm Snapdragon chipset. Qualcomm indicates that the platform can be used to, 'create educational applications that bridge the digital and real worlds.'

There is a spike in demand for location-based learning in the tourism industry. In the two years, the number of US suppliers providing location-based learning services has doubled. Several of these suppliers are now selling authoring tools as well, which are fundamentally new types of location-based learning products.

Interestingly, two of Qualcomm's pre-launch partners are Mattel and Unity Technologies. Unity sells commercial gaming engines with products for both the iOS and Android. The Unity engine is often used by Mobile Learning suppliers, such as Twist Education and C Technologies to create mobile edugames. Unity's Android product has built-in support for Qualcomm's augmented reality platform.

Explosion of New Mobile Learning Content

The number of Mobile Learning content applications has exploded over the last two years. An analysis of the specific types of learning content purchased by each of the eight buying segments is included in this report.

Throughout the forecast period, the sales of packaged content will generate the highest revenue for suppliers. The demand for particular types of content varies dramatically in each buying segment. The twelve types of packaged applications and content included in this analysis are:

1. Language learning
2. Travel and tourism
3. Academic test preparation
4. General education, study guides, and reference
5. How-to manuals and guides
6. Simulation and game-based learning
7. Location-based learning
8. Medical, health, nutrition, and fitness
9. Business, sales, and finance
10. Handheld decision support and performance support
11. Professional licensure, continuing education (CE), and continuing medical education (CME)
12. Professional training and development

Even in the presence of an education category in a store, Mobile Learning apps are spread out among several categories including games, travel, reference, medical, and health. For example, a large percentage of learning apps designed for children are game-based and often tagged as games instead of education.

In the consumer segment, the best-selling Mobile Learning titles are heavily concentrated in distinct niches. A description of those niches is included in this report.

Corporations are now selling learning content directly to their customers. The Cisco Learning Network Store has over 30 Mobile Learning modules that they sell directly to buyers for \$4.99.

An interesting new trend in the US is the launch of new telephony devices preloaded with learning content.

- Dell's Streak 7 Tablet from T-Mobile ships with learning content from BrainPOP, which sells PreK-12 content.

The US revenues for packaged Mobile Learning content will more than double during the forecast period.

- In February 2011, Toura announced a deal with Sprint to have their location-based learning application preloaded on selected phones.
- RIM announced in May 2011 that their new BlackBerry Bold 9900 and 9930 smartphones will come preloaded with the Wikitude mobile augmented reality browser. Wikitude is a pioneer in location-based learning and uses geotags from Wikipedia to overlay contextual content on physical locations.

Devices with preloaded learning applications are common in Asia, but this is the first time this has happened in the US.

Quantitative Methodology, Scope, and Definitions

Ambient Insight provides quantitative revenue forecasts based on our proprietary Evidence-based Research Methodology (ERM). The ERM is an iterative process based on predictive analytics used to identify revenue opportunities for suppliers. There are four key components of the ERM process:

- Isolate target market via leading and lagging indicators
- Define the potential market revenue boundaries
- Triangulate the baseline market revenue
- Forecast the Total Addressable Market (TAM) for specific products

ERM progresses from general patterns (the big picture) to very precise granular patterns. It is used to create a forecast model comprised of accurate predictors. The forecast model is refined as additional data become available. Ambient Insight triangulates baseline revenues from three analysis vectors that include:

- Supply-side analysis
- Demand-side analysis
- Product and Service category analysis

Ambient Insight gathers market and competitive intelligence from a wide spectrum of information broadly classified as leading and lagging indicators. Economic and market conditions are subject to change and the data in this report are current at the time of publication.

Scope and Definition of Mobile Learning

The data in this report are US-centric and only the buying behavior of US buyers is analyzed regardless of whether they buy from offshore vendors. Many suppliers are located outside the US but, so far, Mobile Learning products purchased in the US are mostly supplied by US vendors.

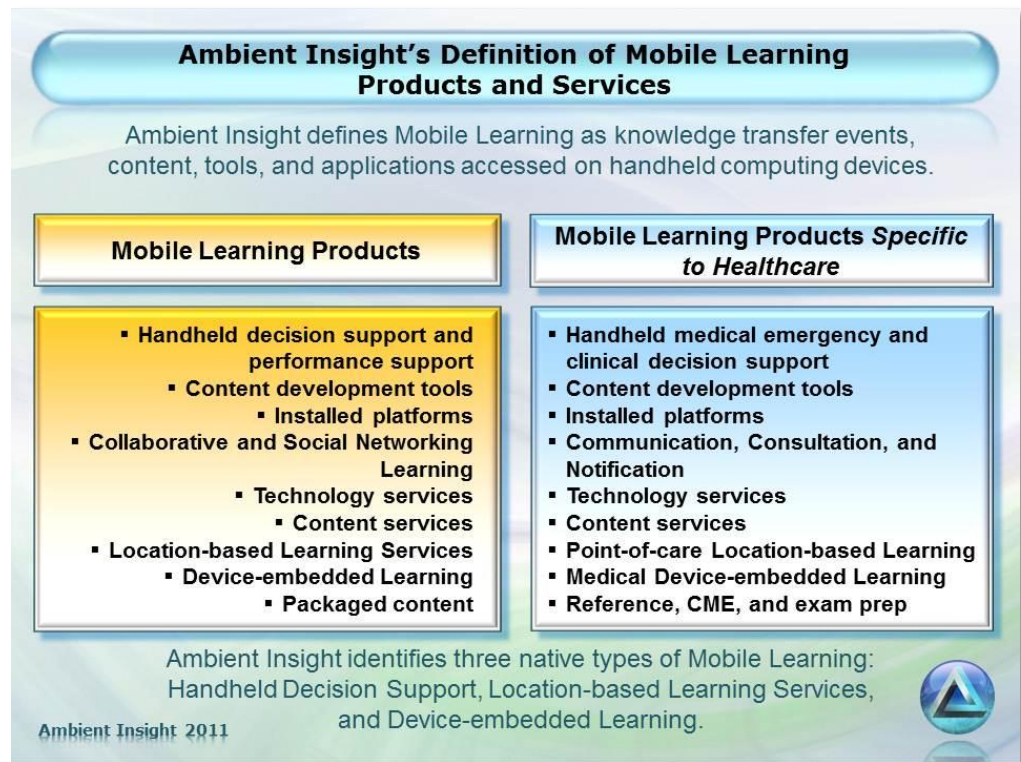
This is changing with European and Asian suppliers entering the US market. The large international learning business process outsourcers now offer custom Mobile Learning services to US businesses.

The forecasts in this report exclude the wide range of "educational toys" designed for very young children. The forecasts do include the revenues for handheld learning devices designed for children. The distinction depends on the purpose of the device. If it is primarily designed for play, it is a toy. If it is designed for academic education, it is a learning device.

Definition of Mobile Learning

Ambient Insight defines Mobile Learning as knowledge transfer events, content, tools, and applications accessed on handheld computing devices. In our taxonomy, laptop and netbook computers, while perhaps mobile, are not considered handheld devices.

Figure 5 – Definitions and Categories of Mobile Learning Products and Services



There are mobile versions of the seven other learning product types tracked by Ambient Insight. To the extent that they have been modified substantially from their original format into mobile formats they are considered Mobile Learning products.

Ambient Insight defines three major types of "native" Mobile Learning products: Handheld Decision Support, Location-based Learning services, and Device-embedded Learning.

- **Handheld Decision Support** is an interactive application that provides sequential performance and decision support based on the input provided by the user. Handheld Decision Support is very common in corporate mobile field force, government first responder, and clinical healthcare environments.
- **Location-based Learning** is based on location-based services (LBS) technology. It is a type of knowledge transfer enabled by wirelessly-networked interfaces and sensors responding to the actions of a user at a specific location *in space and time* to create a situated learning

experience. RFID chips, GPS chips, barcodes, Quick Response (QR) codes, SMS short codes, image recognition, and augmented reality technologies are often used in this type of learning, particularly in clinical healthcare environments, first responder situations, museums, tourist attractions, consumer and patient education, navigation applications, and in the travel industry.

- **Device-embedded Learning** is when the primary purpose of a handheld computing device is to enhance learning, access educational content, and assess and support performance. The device functions as a personal learning system. This type of product is very common in the consumer and PreK-6 academic segments.

Related Research

Buyers of this report may also benefit by the following Ambient Insight market research:

- [The Worldwide Market for Mobile Learning Products and Services: 2010-2015 Forecast and Analysis](#)
- [The US Market for Self-paced eLearning Products and Services: 2010-2015 Forecast and Analysis](#)
- [The Worldwide Market for Self-paced eLearning Products and Services: 2010-2015 Forecast and Analysis](#)
- [The US Corporate Market for Self-paced eLearning Products and Services: 2010-2015 Forecast and Analysis](#)
- [The US Collaboration-based Learning Market: 2010-2015 Forecast and Analysis](#)
- [The US PreK-12 Market for Self-paced eLearning Products and Services: 2010-2015 Forecast and Analysis](#)
- [The Worldwide Market for English Language Education Self-paced eLearning Content: 2009-2014 Forecast and Analysis](#)
- [Ambient Insight's 2011 Learning Technology Research Taxonomy](#)



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