Technologically Enhanced Learning Experiences (TELEs) for Workforce Development

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ABSTRACT

Technologically Enhanced Learning Experiences (TELEs) provide a flexible learning solutions tool to address the disparity between workers’ skills and employers’ needs. TELEs are online training modules providing initial and long-term support for workers to upgrade their occupational and interpersonal skills to regain lost earnings, reintegrate into the workforce, and increase the supply of skilled workers employers need to remain competitive in the current economy.

Introduction

To maintain a competitive edge in the market place, the US must produce a skilled workforce which requires a multi-faceted approach to training addressing workers’ hard and soft skills. Limited training resources force state-run career centers, community colleges, technical institutes, four-year colleges, and private educational providers to wisely invest in training aligning employer demands with worker competencies for specific technical skills as well as soft or interpersonal skills. Aligning the interests of employers with the labor market (Manyika, 2011) necessitates creating a space in which employers and workers find meaningful information. The capacity of public and private organizations to align training programs with training needs is paramount if the US labor pool is to “attract and retain employers, help[s] reduce unemployment, and allow[s] for fulfillment of societal needs” (Salas, 2012, p. 75). Within this space, workers make informed choices about training programs likely to increase their earnings and meet current employer needs (Jacobson, 2013). Technologically Enhanced Learning Experiences (TELEs) are a training tool for workforce development which incorporates a cost-effective, flexible learning solution approach. TELEs are online training modules providing initial and long-term support for workers wishing to upgrade their occupational and interpersonal or people skills to regain lost earnings, reintegrate into the workforce, and increase the supply of skilled workers employers need to remain competitive in the current economy.

Training Needs

The 2007 economic downturn created a glut of unemployed workers with less than marketable skills. The Department of Labor (2014) reflects 9.6 million people as unemployed in August, 2014 and a pronounced skills mismatch between employers and employees after the Great Recession (Hotchkiss, 2014). Research has documented the need for increased training in
interpersonal or soft skills for workers who wish to upgrade their skills and adult learners who wish to engage with post-secondary level curriculum, receive feedback, and complete soft skills certification (Burris, 2013; Goldstein, 2002; Salas, 2012). The investment in human capital through rigorous interpersonal training drives improved relationships between all stakeholders and provides more dividends and profits for firms than does investment in finance, products or markets (Boudreau, 2005). Employers that invest in soft skills training have a competitive advantage in the marketplace (Huselid, 2011) because their employees are better able to deal with intra-workplace conflict, engage in positive labor-management relationships, and contribute to the productivity and efficiency of the firm (Salas, 2012).

Workplace organizations have spent approximately $164.2 billion in worker training in 2012 (“State of the Industry,” 2013), and the trend in training, learning, and development has been to use increased technology (Patel 2010). According to Salas (2012), training research shows “training works” and “the way training is designed, delivered, and implemented matters” (p.74). Since substantial evidence exists that workplace training works if well-designed (Wang, 2005), it makes sense to view training as an investment in future productivity of the firm as well as an investment in the human potential of the workforce. Firms that invest in workers’ human capital should do so based on evidence documented through training research in order to make informed investment decisions “about the science of training effectiveness” (Salas, 2012, p. 92).

Soft skills, critical in workforce development, are a significant contributor to workplace success (Bedwell, 2011; Goleman, 1995) and rank as one of the most important requirements for personal and organizational success. As research in the healthcare industry suggests administrators and educators believe healthcare providers should have an “excellent bedside manner” (Bedwell, 2011, p. 4), many local and international firms are becoming interested in their workers’ abilities to develop and maintain relationships, collaborate within and across global boundaries, and communicate verbally and nonverbally with all interested parties.

The multidimensionality of interpersonal skills has been segregated into two broad categories, interpersonal communication and relationship building (Klein, 2006). Klein (2006) develops these categories from research on interpersonal skills derived from a trait-based approach which contends individual behaviors can be learned or are inherent and a situational approach which contends the environment or social situation encourages the continuous correction of social performance based on others’ reactions. Interpersonal communication and relationship building are essential for successful workplace organizations.

Delivery Systems

Technologically Enhanced Learning Experiences (TELEs) are one solution which holds the promise of flexibility, cost containment, and the reduction of environmental footprints. As the interest in learning minus formal instruction was necessitated because of skyrocketing costs, environmental concerns, and fewer available governments-assisted educational programs, the idea of “informal learning, self-choice learning, spontaneous learning, resource-based learning, and self-directed learning” (Hannafin, 2014) led to student-centered open learning environments (SCOLES) as hybrid learning environments. Blended face-to-face and online courses surfaced and provided choices for students to address individual unique and specific learning interests as
defined by their needs. TELEs can provide an online learning buffet of customized courses and training sessions which address the identified unique and specific needs of learners.

Wang & Hannafin (2005) define TELEs as “technology-based learning and instructional systems through which students acquire skills or knowledge, usually with the help of teachers or facilitators, learning support tools, and technological resources” (p. 5). TELEs are electronic interactions between students and instructors or facilitators which foster learning in a distributed learning environment situated within specific contextual parameters of workforce development such as workplace relationships or workplace communication. TELEs are grounded in “design-based research which blend[s] empirical research with theory-based design of learning environments” (Swan, 2012). Design-based methodologies should consider aligning learning environments with “strategies for developing and refining theories” (Wang, 2005, p. 12) which could improve the curriculum and delivery of TELEs and evaluation of learning outcomes. Design-based research contributes to the creation and development of knowledge in learning environments (Collective, 2003).

TELEs differ from traditional instructional design approaches because they fuse research and design. Traditional instructional design is predicated on existing theory, and the design’s effectiveness is tested after delivery. TELEs mediate and refine theories through practical application of design resulting in synergy between research and design. This interaction between research and design, researchers and practitioners, and learning environments and learning theories produces data which either supports or rejects the existing theory and may require design changes. Inconsistencies or flaws quickly become visible and adjustments are made to the design, so “design is embodied in research, and research is embodied in design” (Wang, 2005, p. 13). This then is the nature of the TELE.

TELEs are designed to teach behavioral skills through virtual interaction and provide to employers a quality and flexible learning solutions tool. Current research reflects that soft skills such as self-confidence, self-control, and commitment create successful employees and more successful firms (Goleman, 1995). Antidotal evidence suggests the horizontal, team driven, and collaborative partnerships in today’s workplace require leaders and followers to cooperate. Changing behaviors is a long-term process so TELEs provide initial and long-term support focusing on the broader parameters of organizational and behavioral changes and help firms understand how those competencies work together to create employees who can manage themselves and relate to others.

Learners who master soft skills provide a proactive, engaged, and knowledgeable workforce who think-on-their-feet, respond quickly and creatively to problems, and contribute to an atmosphere of cooperation and collaboration in the workplace (Salas, 2012). Firms have an advantage in the marketplace because their employees are better able to deal with intra-workplace conflict, engage in positive labor-management relationships, and contribute to the productivity and efficiency of the firm. TELEs providing essential instruction in interpersonal communication and relationship building which help development a well-rounded employee who appreciates different perspectives, brings creativity and ingenuity to the work process, and solves problems in an amenable and efficient manner. As a result, this worker becomes an invaluable asset to the employer. The use of TELEs by employers to upgrade workers’ emotional IQ provides a competitive advantage by decreasing training costs and time, providing easier access
to course material, and reducing carbon footprints. TELEs are user-friendly, tailored to adult learners, available 24/7, reduce educational costs, alleviate travel to/from an educational institution, negate child/elder care costs, allow for active rather than passive learning, are grounded in theoretically based principles of adult learning suited to different learning styles, allow students to manage their own time, remain on task at their own pace through the use of asynchronous electronic blogs, posts, and video chats, and revisit unclear or unfamiliar material, and include testing components with instant feedback.

Designing TELEs

Designing TELEs presents special design challenges. A flexible timeframe for completion is paramount in addressing the needs of learners whose work, familial, and community obligations often limit the amount of time available for studies. TELEs do not necessarily conform to the standard US educational system’s semester which usually lasts from 8 to 16 weeks. Rather, the length of a TELE is based on the amount of time required for students to gain competencies within a content area so the design and delivery must be malleable enough to ensure learning takes place. This means designing and delivering focused content specific to the learner’s need in a timeframe consistent with the learner’s availability.

Digitally connecting the theoretical application of adult learning with retraining for disadvantaged workers is one strength of TELEs. The flexible, shorter-term approach used by TELEs provide educational opportunities for adult learners who may be less confident than younger workers (Bowman, 2007). One weakness of TELEs is the longer assessment and evaluation period required to document changed behavior. More discussion about how learning is evidenced appears later in this article.

The training research literature refers to training as “a systematic approach to learning and development to improve individuals, teams, and organizational effectiveness” (Goldstein, 2002, p. 452). This suggests a continual, logical, and methodical engagement or interaction strategy in which humans have opportunities to acquire tertiary qualifications for advancement in their workplace lives. Individuals engaged with learning opportunities in the workplace are involved in an interrelationship between workplace culture, practice, and expectation (Alvesson, 2002) and their own set of experiences and education (Billet, 2006; Wenger, 1998). Consequently “learning is both a component and an outcome of individuals’ engagement in work” (Weedon, 2013, p. 13).

The ability of individuals to learn is impeded by many obstacles: situational such as job, family, or household, institutional such as cost, appropriate courses and scheduling, and dispositional such as “perceptions like little to gain by participating, concerns about own ability to succeed, belief that one is too old to go back to study, and bad previous experience with schooling” (Rubenson, 2009, p. 192). Structural barriers embedded in market-based government policies regulating funding for training in adult education programs often contribute to inequities which determine eligibility and compensation issues (Rubenson, 2009). As a result of macro structural and micro situational, institutional, and dispositional barriers, adult learners face challenges in the acquisition of tertiary qualifications and may embrace an opportunity to engage with and acquire educational credentials via TELEs.
The term competencies is often used as a synonym for skills (Burrus, 2013). Competencies “can be defined as the ability to perform and sequence actions to attain a specific goal” (Evers, 1998) and the “strategies and procedures for acquiring and working with the knowledge that comes with experience and practice” (Tippins, 2010, p. 9). References to competencies extend to those skills considered important for most jobs. Though certain technical competencies or skills may be specific to one particular industry or job, interpersonal competencies or skills are ubiquitous to most industries and jobs. Competencies outline and clarify the specific goals of an educational experience.

Another important term to define is student or learner. Traditional students enter secondary education between the ages of 18-24, while nontraditional students have some experience in the workforce and return to school to upgrade skills, complete previously interrupted education, or for personal satisfaction. Government funding for higher education through The Workforce Investment Act (WIA) (“Workforce Investment Act”), The Servicemen’s Readjustment Act of 1944, more commonly known as the GI Bill (“Employment and reemployment rights of members of the uniformed services,”), or other training programs encourage nontraditional students to return to higher education. Such an investment in human capital returns dividends in the form of increased wages from which higher taxes can be extracted, creates a knowledgeable citizenry who make informed decisions, and contributes to the overall public good of the country.

After the Great Recession, the idea of traditional and nontraditional students became blurred as learning environments filled with students of all ages and skill levels. The term learner seemed to better describe the typical individual inhabiting the learning environment in a knowledge-based economy. Defined as one who continually engages with new knowledge depending on the situational context of the environment (Knowles, 1998), a learner pursues learning as a lifelong pursuit. For our purposes, we will interchangeably use the term student and learner.

The term learning also requires some explanation. Learning implies a learner has acquired new information which causes a change in behavior or the acquisition of knowledge, skills, and attitudes (Knowles, 1998). Changed behavior or acquisition of knowledge, skills, and attitudes is evidence learning has occurred within the learner. “Learning is the process of gaining knowledge or expertise” (Knowles, 2005a). The multiple interpretations given to the term learning by learning theorists describe learning as a process (Crow, 1963), a product (Haggard, 1963), and a function (Harris, 1961). All agree learning shapes, changes, or controls behavior (Knowles, 2005b). Subsequent learning and cognitivist theorists suggest learning includes competency development (Bruner, 1966) and personal involvement and evaluation by the learner (Rogers, 1969). This worldview suggests learning hinges on the philosophy that learning is organic, proactive, and relational and is the interpretation most relevant to the development of TELEs.

Framework for the Development of TELEs

The framework for the development of TELEs is based on the principles of adult learning theory, training transfer and its assessment, the design of competencies that link specific skill performance with specific curricula content and job descriptions, and continued support once
formal training ends. The impact of TELEs on learning relies on the assessment of learning outcomes through quantitative and qualitative metrics which assess the effectiveness of knowledge, skills, and abilities (KSAs) acquisition. Training needs for workforce development should be “purposeful, outcome-based, strategic, and based on the contextual need of the work environment and on sound principles of adult learning (Koo, 2010, p. 254). This necessitates a collaborative relationship between the entity responsible for designing workforce development training and the firm wishing to upgrade its workers’ KSAs. The academy must be able to identify how best to translate research into practice in order to enhance the curriculum through evidence-based workforce development training, and the firm must identify specific training needs necessitating specialized and focused training programs. This exchange results in a two-directional partnership between academies and firms which addresses the continual changing needs of firms as they respond to market forces dictating malleable workforce KSAs and current evidence-based research in designing, delivering, and evaluating theoretically-sound, high-quality training programs.

Adult Learning Theory

Adult learning theory is an integral part of designing and delivering soft skills training to enhance workforce development. Adults bring to the table a history of education and experiences which influence the way they think, act, and learn (Smith & Smith, 2010). Adults expect the learning process to be relevant and outcomes to be clear and integrated into the curriculum (Caffarella, 2002). What they learn today, adults expect to use tomorrow (Koo, 2010), consequently, adults require a variety of learning experiences which simulate “real life” situations (Bransford, 2000; Knowles, 1998; Schon, 1987; Wlodkowski, 2008). If the adult learner is engaged, the likelihood of learning is increased. As mature workers and reliable employees, adults seek to gain competencies which will translate into higher earnings and better benefits (Smith & Smith, 2010). The “adult friendly” curricula, which seek to optimize flexibility, access, and success for working adult learners, are adaptable to mature age workers in the form of shorter courses and a compressed time frame within an e-learning environment.

Adult learning theory offers prescriptions for defining the learning environment, engaging the adult learner, and identifying learning activities appropriate for adult learners. Adult learning theory is an important component in the development of competencies which detail the expected outcomes of learning experiences. “Competencies ‘facilitate adults’ engagement in the learning process” (Koo, 2010, p. 256).

A learner-center approach (Wadsworth, 1996) used in developing the adult-friendly curriculum (Smith & Smith, 2010) for soft skill training is theoretically grounded in the Action Research Model developed by Lewin (1946). Action research seeks to find solutions “focused on participative group processes for addressing conflict, crises, and change, generally within organizations” (O’Brien, 1998, p. 8). Therefore, much of the researcher’s time is devoted to refining the methodological tools used in collecting, analyzing, and presenting information in an ongoing basis (Lewin, 1946) and is based on existing and new data derived from interactions with learners. The mediation and refinement of this practical application increases the chances of learning transfer and the development of cross-cutting competencies for lifelong learning.

The use of technological tools to enhance learning is contextualized in some transition literature in academics as dimensions of “independent learning, group work, motivation and
responsibility and numerous initiatives aim[ed] to encourage students to develop in these areas and foster skills such as autonomy, critical thinking and self-directed learning” (Cook, 2008). Future jobs require upgraded occupational skills as well as dependability and conscientiousness which can yield significant returns for a firm over the long term.

Training Transfer

Pressure to change the way learners learn comes from the necessity for a trained workforce, as well as from the academy. As institutions of higher education and intermediaries such as community colleges, career and technical programs, and apprenticeships with limited resources strive to attract, retain, and prepare more students for career paths, new and innovative instructional practices and assessment techniques are needed to maintain a competitive edge in the marketplace. A student’s ability to learn via traditional methods is minimal (Fink, 2013) and requires rethinking instructional curriculum, delivery, and certification of learning. Reduced resources necessitate an emphasis on objective measurements of learning transfer documented through performance-based testing and accountability programs which ties funding to performance measures. This complicates the issue of measuring soft skills transfer because of the intangible nature of the skills. The knowledge-based economy challenges traditional teaching from simply learning technical skills to the necessity of learning critical thinking and problem solving skills (Dolence, 1995). Teachers must shift from an instructor-centered approach to a learner-centered approach and present information in ways which engage the students in virtual interactive and hands-on-learning. TELEs requires structural changes on the part of educational institutions which must now explore new online delivery systems, provide increased faculty support for training in instructional design, and evaluate the success of such systems.

Training designed and delivered to workers should produce some measurable output in the form of direct organizational performance such as reduced errors (Senders, 1991), acquisition of new skills (Hill, 2006; Satterfield, 2007), increased team performance (Edkins, 2002; Morey, 2002; Salas, 2001b; Salas, 2012), or indirectly to organizational performance in the form of reputation (Clardy, 2005; Darch, 2002) and social capital (Brown, 7). These measurements are then used to determine whether sustainable changes in behavior or cognition occurred and if the training investment was beneficial to the firm and society.

Measuring soft skills learning transfer is more difficult than measuring technical skill transfer. Objective metrics tell us whether a technical task was successfully completed. Technical skills’ transfer is “insufficient for subsequent success beyond an entry-level position” (Laker, 2011, p. 113). A more robust skill transfer must take place in the form of soft or interpersonal skills.

Engagement with and results from the use of soft skills may not immediately be apparent. Soft skills involve the ability to handle personal interactions with others, manage oneself, take leadership positions, resolve conflict, communicate in written and oral form, and possess emotional intelligence. Employees who wish to move beyond entry level positions within a firm usually require proficiency in these areas (Goleman, 1995; Laker, 2011; Mitchell, 2010). The ability to learn how to handle oneself in interactions with coworkers, managers, and the public presents some challenges to workers who may feel they already have some skills in these areas. Individuals usually believe they have some adequate way of dealing with others and may resist
organizational or managerial requirements to adopt new approaches (Salas, 2012). Unlike the learning environment for technical skills which can mirror the work environment, the learning environment for soft skills is difficult to recreate because of the seriousness and complexity of real-life situations. Also, unlike the transfer of technical skills, the transfer of soft skills may result in multiple correct solutions depending on situational circumstances. Uncertainty about when to apply new soft skills’ approaches and in what context to apply them increases workers’ resistance to learning soft skills and increases the likelihood of dissonance during transfer. In order to increase the transfer of soft skills’ training to the job, instructors employ multiple techniques within a virtual environment using written, video, and interactive case studies, role playing, team development. The individual student, working at his or her own pace, can virtually interact with avatars within a simulated environment to develop strategies for success, solve problems and build relationships.

The “transfer problem” (Grossman & Salas, 2011, p. 104) is a long recognized issue for the academy and workplaces. Narrowing the gap between training and workplace performance is a challenging goal, and positive results to date have been minimal (Georgenson, 1982; Saks, 1995; Yamnill, 2001). Seminal work on training transfer (Baldwin, 1988) was further refined (Ford, 1997) to reflect three broad constructs: learners, intervention, and work environment (Burke, 2007). According to Burke (2007), learner characteristics which influence training transfer include “cognitive ability, self-efficacy, pretraining motivation, negative affectivity, perceived utility, and organization commitment variables” (p. 271). The intervention construct includes the design and delivery of the training, and the work environment dictates which specific knowledge, skills, and abilities are necessary to perform the job.

TELEs designed for soft skills training address the transfer problem in three ways: content design, assessment, and evaluation. First, let’s address content design. Creating social presence in an asynchronous online environment is essential. Embedded in the course content are social cues, exchanges, and interactions between the instructor and the learner and between learners which simulate physical presence. Interactive discussion boards, community forums, video-based lectures, voice-over PowerPoints, gaming components, and podcasts create an atmosphere of social presence. A foundational piece is the learner’s engagement with the content. Longer engagement with the material suggests greater learning transfer. Keeping the learner’s interest is then paramount in the content design of TELEs.

Secondly, the assessment of learning transfer is important. Assessment is formative and focuses on improving learning transfer. Assessments from learners and workplaces provide the impetus for change (Mayer, 2011) and are predicated on the length of time the learner engages with the material, the interactivity exhibited by the learner, and learner feedback. Learners’ growth and knowledge competence is assessed via a qualification framework connecting learning outcomes or objectives with specific learning assignments or objects. Training providers establish their own qualifications framework using rubrics and a traditional grading system or use a standardized qualification framework based on competencies such as those outlined in the Degree Qualification Profile (DQP) established by the Lumina Foundation (Ewell, 2013). The concept of moving toward competency-based outcomes has some relevance for assessing competencies in workforce development. This learning assessment space allows a two-way feedback loop between instructors and students to identify areas of weakness so improvement can be made. Integrating assessment efforts with educational planning and instructional design
continuously through the learning activity will help develop, test, and disseminate more effective strategies resulting in greater learning transfer and a more competent workforce.

Thirdly, evaluations are summative and gauge the evidence of cognitive, affective, or behavioral changes in the learner. Evaluations designed to document achieved competencies provide evidence that learning transfer occurred through some change in the learner’s personal life, workplace, or society. Instructors evaluate the evidence learners produce through quizzes, exams, worksheets, written papers, group or individual projects, skills and competencies exams, reflective writing, e-portfolio creation, and other graded assignments within some range of acceptability mirrored in rubrics designed to reflect benchmarks in competencies. Evidence of long-term learning transfer is more difficult to produce and requires longitudinal studies which follow learners into the workplace and society.

Linking Competencies to Specific Skills

Linking competencies to specific skills lies at the heart of workforce development. The Employment and Training Administration (ETA) identified specific core competencies of KSAs required of all workers in many occupations (Ennis, 2008; Lucia, 1999; Rodriguez, 2000). Competency models are used to align labor market demand with labor market supply by workforce development specialists, Workforce Investment Boards, and education and training providers who link workers with an occupation or industry (Ennis, 2008; Mansfield, 1989; Rodriguez, 2002) in which they have the greatest chance of success for career and geographic mobility. Competency models establish a framework in which a common language, expectation, and perspective allows individuals, teams, and organizations to recruit, screen, hire, train, evaluate, and advance competent workers (Ennis, 2008). Competency models allow employers to better align the needs of their firm with the employees’ KSAs and allow learners to align their interests with current or potential employers. Linking foundational competencies to specific skills provides a “‘means’ (knowledge, skills, abilities) to and ‘end’ (to be an effective employee functioning and performing at expected standards)” (Youn Chyung, 2006) credentials learners for potential career advancement and participation in the global workforce.

Continued Support

Though workforce training should be planned, systematic, and designed to promote the acquisition of KSAs (Salas 2001), some learners need continued support once formal training has ended. Pedagogically sound opportunities to learn specific and targeted KSAs through the delivery of “instruction, demonstration, practice, and timely diagnostic feedback about their performance” (Salas, 2001a), “provide benefits to individuals, teams, organizations, and society” (Aguinis, 2009) through sustainable changes in behavior and cognition. TELEs are designed to include additional information and training should learners who need continued support. Continued support is available in the form of web-based formal mentoring programs in which learners engage with an instructor in a synchronous online environment, informal mentoring embedded in blogs and chat rooms providing space for a community of learners to ask and respond to questions, and self-directed learning in which learners access a pool of available web-related topical resources in order to strengthen and reinforce interpersonal communication and relationship building skills.
Conclusion

The changing nature of the economic environment, limited resources, and demographic changes in the workforce require new and innovative training techniques in workforce development in order for the US to remain competitive in a global economy. Today’s workforce must not only have the knowledge, skills, and abilities to meet the changing needs of employers and firms who operate in a diverse and globally-competitive marketplace but the competencies to adapt to new organizational structures and firm models which require better communication and relationship building techniques. Aligning employer needs with worker competencies requires rethinking the delivery of workforce development training to include soft and interpersonal skills as well as technical skills. This necessitates training mechanisms which support the malleable needs of employers and employees. TELEs provide a theoretically-designed, pedagogically-sound, learner-centered approach to training which allows the current and future workforce to acquire, enhance, and adapt soft and interpersonal skills competencies to local, national, and global work environments. TELEs provide an electronically interactive, cost-effective, carbon-reducing training mechanism which allows learners to access material based on their timeframe, work at their own speed, reintegrate with the material for continued support, and receive credentials for competency certification.

References


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