Microlearning as a means of Training Middle Managers

by

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Abstract

The following study focused on microlearning, and how it can best be applied to workplace skills development for middle managers. The learners are adults who are presently employed. Classroom based workplace learning approaches are becoming less common (Schmidt, 2007), and online learning is developing faster than institutions can adapt, resulting in a need for new practices and learning communities (Emerson & Berge, 2018; Lindner, 2007). The research was conducted using a meta synthesis as its methodology. Thirty six academically reviewed qualitative articles were analyzed, and best approaches were cross-referenced to reveal common themes. As a middle manager's common role and skills required to be effective emerged, best approaches to learning using microlearning were evaluated. This results in a new contribution to literature on how microlearning can be leveraged in workplace training contexts.

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Chapter 1 – Introduction

The world has changed immensely over the past few decades, and many of these changes have been as a result of the growing integration of technology into society (De Wet, Koekemoer & Nel, 2016). These changes have had an effect on the ability of humans to focus, and recent studies have shown that the average human attention span is now about eight seconds (Donahue, 2016). Developments in society due to changes in technology have not only influenced the way people think, but also how they interact and complete tasks at work (Marius, 2012). Moreover, the demographics of workplaces have shifted, and for the first time in history four generations are currently in the workplace, presenting both opportunities and challenges for businesses **(**Lewis & Westcott, 2017).

A study by Capita Learning and Development in 2010 of 100 of the largest 500 UK firms presented some revealing results about the state of workplace skills development. The report found that 70% of business leaders feel that a lack of skills in staff is a significant threat to the company's ability to take advantage of economic growth periods (Harris, 2010). Subsequently, almost 50% of those surveyed feel the learning and development teams of their organizations lack the ability to address these risks and challenges (Harris, 2010).

It is estimated that between 300 and 310 billion USD is spent on workplace training globally each year, and 46% of this is in North America (Harwood, 2014). The Association for Talent Development estimated in 2014 that 70% of skills development at work in the United States occurs with an instructor in a classroom, while just 30% is completed using technology online (Miller, 2014).

The choice of traditional, formal classroom training in more than two thirds of the

cases surveyed may not represent what employees see as the most effective means for building workplace skills. According to a study of private sector employees conducted by Towards Maturity, learning that occurred in a classroom context was only identified as helpful when building skills for use at work 64% of the time (Overton, 2014). Classroom learning was actually the fifth most popular choice, with collaborating with others (88%) and Google Searches (70%) being two more popular choices (Overton, 2014).

When it comes to developing workplace skills for middle managers, a need for change has also been revealed. Middle managers are now often expected to possess innovative skills and knowledge to best identify strategies to address challenges, be aware of changes in technology (Abugre & Adebola, 2015), as well as being continuous learners (Qiao & Wang, 2008). Unfortunately, training for middle managers doesn't always assist when developing these skills. A study presented in the Harvard Business Review found that 67% of surveyed companies believe their middle management training needs to be completely overhauled (McKinney,McMahon, &Walsh, 2013). Additionally, Fox (2016) noted that developing middle managers properly is paramount to how a business executes its company strategies; however, training often fails to deliver coveted results they seek**.**

If, as stated by Marius (2012), the workforce of the 21st century think differently, interact differently, and complete their work differently, training approaches too need to be modified to meet the needs of these workers. Schmidt (2005) expressed that a learning approach that is on demand and is embedded directly into the process of work is what is really needed. Peschl (2006) expounded on this idea by declaring that this embedded learning can be realized through the use of microlearning.

Andragogy has been used as a theoretical framework in which to frame the aforementioned research, and is relevant through its focus on adults. Middle managers are adults, and five of Malcolm Knowles' (1984) assumptions of adult learner characteristics informed the selection of microlearning materials deemed best suited to the needs of middle managers. More current approaches to andragogy were also taken into account.

Research Questions

When evaluating the concerns regarding the need for change in the approach to workplace skills development for middle managers, this research paper addresses the following:

1) In what ways might microlearning be best used in workplace skills development for middle managers?

a) What might companies require middle managers to be able to do?

b) What skills should be developed in middle managers as a result of skills training programs?

Definition of Terms

Informal Learning. Spontaneous and non-structured learning that happens in daily life, which can also be knowledge or a skill that is acquired outside the courses of educational institutions (Garcia-Penalvo, Colomo-Palacios & Lytras, 2012).

Microcontent. Information that focuses on a single topic, and can be co-created by learners using Web 2.0 and other e-learning tools. Units can be understood without any additional information, and cannot be divided up without meaning being lost. Each piece of microcontent has a unique URL (permalink) to make it easily accessible (Buchem, 2010).

Metadata. Data that describes other data. It provides information about the content of a certain item, such as how long a text document is, who the author is, and when it was written (Tech Terms, 2019).

Ontology. A data model that shows a set of concepts in a domain and the relationships between those concepts (Herwig, 2007).

Resource description framework based languages. – A framework for describing website metadata, and details information such as the sitemap, dates of updates, and keywords that search engines look for (Webopedia, 2019).

RSS feed. – The standard for syndication of Web content. It is XML based, and allows sites to register and syndicate content such as news, events, and project updates (Webopedia, 2019).

Self Efficacy. The belief in one's own capability to attain a certain goal (Bandura, 1997).

Social Software. Web 2.0 software that supports social interaction. It brings together learners with different prior knowledge and goals through collaborative writing, social

networking, or social tagging. It is flexible and rapid in how it delivers content as well as social interactions. It is integral to how online communities connect, create, aggregate, use and re-purpose content (Buchem, 2010).

Tacit Knowledge. A depth of knowledge gained through experience and practice (Emerson & Berge, 2018). It is particularly well developed in contexts where interaction occurs (Hartley, 2010).

Web 2.0. A term given to the second generation of the World Wide Web that focuses on enabling users to collaborate and share information online. Blogs, wikis and web services are some components of Web 2.0 (Webopedia, 2019).

Limitations and Delimitations

Limitations.

Limitations are constraints as a result of methodology and study design choices that are beyond the control of the researcher, but could potentially impact the study outcome (Simon & Goes, 1990). Many limitations of the proposed study were as a result of the meta synthesis methodology. Meta synthesis as a methodology limits the scope of research that can be conducted to qualitative studies (Walsh & Downe, 2005). Limitations exist in the equivocal nature of qualitative studies, and how challenging it is to use this type of data to explain comprehensively why phenomena occur (Walsh & Downe, 2005). Microlearning is being used to build employee skills, but the lack of examples where literature has detailed how it was used successfully created limitations. Moreover, it is difficult to assess validity and reliability of sources in qualitative studies

(Simon & Goes, 1990). I also only had access to certain databases for content, which could have been limiting.

Delimitations.

Delimitations of a study are the characteristics that result from limitations in the choices in the scope of the research, including what was included and excluded as the study was developed (Simon & Goes, 1990). Delimitations exist within this study, in particular related to my choice of topics and decisions I made during my research process (Simon & Goes, 1990). Choices that I made in terms of themes, such as the use of video, tagging, wikis and situational mentoring as best practices, as well as my choices of articles to deem relevant and irrelevant can be seen as delimitations. The scope of my research question, assumptions that may have been made about using microlearning to build skills at work, and the choices I made with middle manager articles across varied industries may also have resulted in delimitations. My selection of andragogy as my theoretical framework may also have created boundaries around my study, which could have promoted delimitations. In order to address these delimitations, more than 50 articles were retrieved, and a systematic evaluation of microlearning best practices and middle manager roles and skills was undertaken. Developments in andragogy were also taken into account, as well as challenges to the validity of the theoretical framework.

Chapter 2 – Literature Review

Introduction

This chapter introduces the theoretical framework of andragogy, which was used to conceptualize the aforementioned research into best practices for building skills in middle managers. The results of a comprehensive literature review into common characteristics of middle managers as well as details on microlearning and how it may be used are also represented.

Theoretical Framework

The proposed research was guided by the theoretical framework of andragogy. Andragogy has evolved as a modern form of adult learning theory, and was originally conceived by Alexander Kapp in the mid 1880s to describe Plato's educational theory (Darden, 2014). Assumptions within the theory were later developed and refined by Malcolm Knowles in the 1970s and 1980s. Knowles described andragogy as the art of science of assisting adults to learn (Darden, 2014).

Andragogy is an applicable theory for which to frame my research on microlearning in workplace contexts. Workplace learners are adults, and learning created for this group can benefit greatly from the assumptions associated with andragogy. Throughout my research into best practices when designing learning environments for adults at work, I looked for instances where assumptions within andragogy are taken into account. This informed my later suggestions on how to optimize learning design.

Malcolm Knowles' work on andragogy included assumptions that he added to and developed over his career (Pappas, 2013). Five of these assumptions provide a lens to evaluate best practices within my research on microlearning design for adult workers.

These five assumptions include: (a) that adults become less dependent and more self directed as they mature and evolve, (b) as adults gain experience, the knowledge that comes from this experience becomes a resource for how they later learn, (c) their readiness for learning grows as tasks and social roles develop, (d) with maturity, adults' perspectives on learning change from a subject centred to problem centred focus as well as seeking immediate application of content, and (e) adults' motivation is intrinsic in nature (Darden, 2014; Knowles, 1984;). In addition to the above, later research indicated that adults are goal oriented, and seek courses which have purpose and practical application to life (Bye, Pushkar & Conway, 2007). I have included this as a sixth assumption with which I framed my research.

Notwithstanding, when building learning for adults using andragogy, finding a design that fits all types of middle managers could prove to be challenging, as it has been said that microlearning is more about design guiding pedagogy as opposed to the other way around (Lindner, 2007). Although andragogy can promote independent, intrinsic and self-motivated learners (Fales & Burges, 1984; Taylor & Kaye, 1986), it is unlikely that all adult middle managers will embody the fundamental characteristics inherent to the assumptions of andragogy. In order to not be limited by the assumptions listed above, during the process of my research I was mindful to seek out instances where alternative learner characteristics were evident in order to develop my own design perspective. Low self confidence for example has been proven to have an effect on how self directed learners are (Darden, 2014). By taking varied learner characteristics into account, my research attempts to develop a wide breadth of best practices in learning design using microlearning at work.

Literature Review

Introduction.

The following literature review summarizes and synthesizes how microlearning in the context of workplace training or knowledge development has evolved from the creation of the term to the present. Themes identified in the following paragraphs include: (a) what a middle manager is, (b) the creation of microlearning and how its meaning is interpreted or defined, (c) how content is typically disseminated in microlearning environments, and (d) microlearning as an example of a flexible learning approach in the Web 2.0 era.

Middle managers.

Middle managers are traditionally viewed as linking pins, whose actions have both an upward and downward influence on company strategy (Floyd, 1992). Huy (2001) adds that they are two hierarchical levels under the CEO and one above other line workers and professionals, and Guo and Calderon (2007) note that they are responsible for a significant area of an organization. Feltrinelli, Gabrielle and Trento (2017) maintain that the role of the middle manager is to link the direction of the top managers with the day-to-day tasks of lower level staff. Floyd (1992), Jones (2005) and Feltrinelli, Gabrielle and Trento (2017) all focus on a middle managers role in development and enactment of company strategy on initiatives.

Microlearning.

Microlearning as a term and concept was first introduced in 2004, and was derived from “the concrete development and design of a plain and simple, platform-

independent learning application" (Lindner, 2007, p. 53). Microlearning is often defined as small, specific chunks of information delivered on demand across various media platforms (Emerson & Berge, 2018; Fox, 2016; Kovachev, Cao, Klamm & Jarke, 2011; Lindner, 2007; Schmidt, 2007). Moreover, the content within microlearning is frequently considered to be "interconnected and loosely coupled" (Schmidt, 2007, p.99). Taking a wider perspective on how microlearning proliferates our world, Lindner (2007) also believes that humans engage in microlearning every time they face a challenge to find information and build knowledge in networked environments using digital media. These contexts could be as simple as conducting a Google search, searching for a video on YouTube, or scanning through your Twitter or Facebook feed.

Microlearning has been interpreted in varied ways in literature on the subject. Kovachev et al. (2011) attempt to distinguish microlearning from microblogging (e.g., Twitter) by stating that microblogging content focuses on sharing a single resource with other people, while microlearning is more concerned with collecting personally relevant information from multiple sources in order to fill a gap in knowledge. Regarding length of learning time, Fox (2016) feels that focused, interactive microlearning activities should take no more than three to five minutes to complete, while Hug (2005), Anil Job and Slade Ogalo (2012), and Emerson and Berge (2018) feel total learning time in one sitting should not exceed 15 minutes. Being succinct is a characteristic of microlearning, which was reinforced repeatedly in literature reviewed.

Another aspect of microlearning that distinguishes it from other learning design is the degree of social interaction built into the learning design. Giurgiu (2017) posits that integrating social software into microlearning design can be successful as it has the

capacity to transmit communications and content rapidly across varied formats in situations where content is being regenerated and modified after social interactions occur. Anil Job and Slade Ogalo (2012) contribute that microlearning is a sharing of resources and relies on human interaction with other humans as well as with Internet media.

The interactive aspect of microlearning can also be seen as practical for those learning skills at work for use at work, as activities with user-generated content combined with direct interactions through various social software can support learners when keeping up to date with knowledge needed in their day-to-day work (Buchem, 2010). The social interactive aspect of microlearning design is also supported by the third assumption of andragogy, which focuses on how adult learners gain enthusiasm for learning as their social roles develop (Knowles, 1984). One aspect not explored in much of the literature reviewed is how content quality is measured and maintained within open and collaborative microlearning environments.

Content dissemination in microlearning environments.

Before outlining ways that users typically access content in microlearning contexts, it is important to reinforce that microlearning content, which can be referred to as microcontent, can be drawn from varied sources and can be generated through social software interactions and many forms of media (Buchem, 2010). Schmidt (2007) also observes that in microlearning environments "knowledge workers collect bits and pieces from various sources in order to solve their problems, and the whole information seeking process is characterized by an accompanying learning process" (p. 99). Lindner (2007) also adds that microlearning environments are dynamic evolving ecosystems based on microcontent, and that they are constantly being rearranged into clouds of knowledge.

In terms of content dissemination, Kerres (2007) and Giurgiu (2017) posit that a single piece of microcontent accessed for the purpose of microlearning could be a single internet resource, accessed through a URL. Examples of resources include a presentation slide, a short video, an interview, or a test question. Paul (2016) suggests that content displayed in video and graphic form has the most impact. Emerson and Berge (2018) focus heavily on the use of tags and indexing of microcontent in order to assist in on-demand access, and updates as well as references. The use of tagging links directly to earlier references to social software, as platforms such as Twitter and Facebook use hashtags as a method of organizing content by subject. In addition, the use of weblogs and wikis to house microcontent for use in microlearning are endorsed in Buchem (2010), Schmidt (2007), Milovanovic, Monovic, Stavljanin, Savkovic and Starcevic (2012), Kerres (2007), Tscherteu (2005) and Schachter (2005). Milovanovic et al. (2012) note that wikis provide excellent structure for managing knowledge and have been used much longer than other tools on the internet. Tscherteu (2005) found that wikis help to inspire collective intelligence and offer openness. Weblogs and wikis both use tags as a means of categorizing content.

Furthermore, Giurgiu (2017) lists three specifically created platforms by which microcontent can be housed. The Grovo platform (Giurgiu, 2017) is a learning management system where sixty to ninety second videos are added daily, and companies can also upload videos that specifically target the needs of their staff. Similarly, the Coursmos platform has several hundred micro courses, and a course generally has seven video lessons, each three to five minutes in length (Giurgiu, 2017). Finally, the Yammer platform, which is referenced in both Giurgiu (2017) and Hartley (2010), is a popular

way for companies to share information securely and encourages dialogue and contributions from employees one on one, in groups, within communities or through blogs. Within the literature on platforms and methods of dissemination of content in microlearning environments, there is little reference made to how microlearning design differs in its approach to novice as opposed to expert learners.

Microlearning as flexible learning.

According to Khan (2007), flexible learning is "an innovative approach for delivering well-designed, learner-centered, and interactive learning environments to anyone, anyplace, anytime by utilizing the attributes and resources of the Internet, digital technologies, and other modes of learning in concert with instructional design principles" (p. 1). Flexible learning approaches are applicable to the context of workplace learning for employees who want to access relevant content that will aid them to work effectively. The flexible nature of microlearning is one of the contributing factors to why many organizations are now choosing it as an approach to training (Paul, 2016).

Buchem (2010) and Schmidt (2007) state that microlearning is capable of supporting flexible learning that is integrated into daily work and supports individual needs of learners. Moreover, with advances in technology and changes in society, training participants require rich learning environments, and expect on demand, supported learning environments that can be accessed anytime and anywhere (Khan, 2007). The training participants mentioned above are the very learners my research focused on, and the reference above supports my choice of microlearning as an effective approach to building skills in these learners.

Further to the above, a flexible and well-designed learning environment promotes active involvement by learners in the process of learning (Khan, 2007). The flexibility and openness to using social software applications such as wikis or blogs in microlearning also follows the major premise of learning in the current Web 2.0 era, which "encourages teaching and learning processes based on personalization and collaboration with students taking responsibility for learning" (Giurgiu, 2017, p. 19). Along with Giurgiu (2017), Emerson and Berge (2018) and Buchem (2010) also state that microlearning adds value in a Web 2.0 era by encouraging active participation of learners first through a process of shared creation of microcontent and later in the distribution of this microcontent.

Conclusion.

Literature around the term microlearning emerged in 2004 (Lindner, 2007), and in the proceeding years with "faster internet speeds, better mobile coverage, and pervasive, smaller, faster and more powerful devices" (Meridian, 2016), the approach to microlearning too has evolved with the changes in technology. Microlearning has been identified as being something that many of us do when searching for and gathering information on the Internet to answer everyday questions. It is easily accessible through varied media platforms and a single URL, and is open to the co-creation of content, which can be characterized using tags. Social software tools such as wikis, shared videos, and blogs also encourage interactions between users with varied knowledge, which is seen as practical for learning skills for use at work. Its flexible nature can help to support individual needs of users, be accessed on demand, and mirrors the

encouragement of active participation and contribution of learners inherent to the characteristics of the Web 2.0 era.

Finally, some initial gaps have emerged, such as how knowledge is managed in microlearning environments and how it addresses the needs of novice learners. How knowledge management and measurement of knowledge maturity is approached in microlearning has been addressed in the work of Schmidt (2007) and Emerson and Berge (2018), but methods by which to evaluate this knowledge are not addressed adequately in the literature. In addition, how microlearning is used differently to benefit novice learners with little prior knowledge as opposed to experts further developing skills, though addressed in Fox (2016), Schmidt (2007) and Emerson and Berge (2018) has some contradictory perspectives.

Chapter 3 – Methodology

Introduction

The following chapter begins by reviewing the differences between quantitative, qualitative and mixed methods research. Later, it outlines the research methodology chosen for this study, the research methods, as well as how reliability, validity and trustworthiness were taken into account when choosing secondary sources. Finally, this chapter establishes how the data collected was evaluated in order to determine specific findings.

Quantitative, Qualitative and Mixed Methods Research

Quantitative research studies commonly collect numerical data in controlled environments in an effort to confirm or test hypotheses or theories (Creswell, 2014; Johnson & Christensen, 2014). As further stated by Johnson and Christenson, through data collection and a narrow, specific focus, researchers objectively attempt to determine probabilistic causes or effects. Both Johnson and Christenson and Creswell add that quantitative researchers utilize statistical procedures to attempt to examine the relationship between variables with a goal of making generalizations about aspects such as behaviour that have been analyzed.

Qualitative research on the other hand is subjective and exploratory in nature, routinely involves the collection of non numerical data such as statements through interviews or observations, and may attempt to understand human experiences not previously studied in order to generate new hypotheses or theories (Johnson & Christenson, 2014). Creswell (2014) contributes that this type of research aims to move from particulars to general themes, with interpretations made by the researcher. Johnson

and Christenson add that qualitative researchers see different groups as having different characteristics, are not interested in manipulating the participant's natural environment, and do not seek to make generalizations. Creswell furthers that this type of research is commonly inductive in nature, and Johnson and Christenson state that it takes a wide-angle view to when examining phenomena from varied perspectives.

Lastly, mixed research involves the combination of quantitative and qualitative methods (Johnson & Christenson, 2014). The authors' further note that the mixture of types and what data is used in what stage in the research process depends heavily on the situation and research question the researcher is attempting to answer. Creswell (2014) contributes that in mixed research both forms of data are integrated, and this type of research may involve theoretical frameworks to guide the approach. Johnson and Christenson add that mixed research appreciates both objective and subjective viewpoints, attempts to provide a wider explanation based on multiple perspectives, and endeavours to connect theory to practice.

Methodology

The research was conducted by using a qualitative meta synthesis as its methodology. Meta synthesis research attempts to integrate, combine, and synthesize findings from varied related qualitative studies to bolster what is already known about a particular phenomena (Au, 2007; Barroso, Gollop, Sandelowski, Meynell, Pearce & Collins, 2003; Paterson, Claire-Jehanne, Jacques, Brenda, Judy & Mirela, 2009; Walsh & Downe, 2005). Likewise, meta synthesis is very interpretive in nature, and was created as an explanatory theory (Walsh & Downe, 2005). Barroso et al. (2003) found that the goal of qualitative meta synthesis is to create larger interpretations of all the examined

studies, while remaining true to the interpretation of each particular one. Through the evaluation of many different studies with varied perspectives, this methodology allows for new insights to be revealed rather than set concepts being valued over differing descriptions (Walsh & Downe, 2005). Walsh and Downe add that theory generation should always be open to revision, as phenomena are fluid in nature and synthesis is always expanding and moving beyond previously set boundaries. Furthermore, meta synthesis researchers commonly characterize textual data in identified qualitative studies using a template of codes, starting with broad themes and then narrowing, combining, and discarding themes in an attempt to find consistencies in the data gathered (Au, 2007). What the researcher then interprets from the identified themes may then be represented as findings of their study (Walsh & Downe, 2005).

Research Methods

At the outset of the research for this paper, a basic search was conducted on the Royal Roads University Library website in the Discovery section with microlearning, workplace, and training as keywords. Both *and* and *or* were used as Boolean search operators. In an attempt to find reliable sources, only resources that had been peer reviewed were selected, with no date restrictions. The abstracts of the peer reviewed articles were then scanned, and if they appeared to have relevance to workplace skills development using microlearning, they were put aside for later review. This initial search only produced about five relevant results. The search parameters were then widened to include resources that hadn't been peer reviewed. This produced less than ten results, which were scanned for relevance. Chosen articles were read, paying particular

attention to leading practices when using microlearning, as well as aspects relevant to how microlearning can be used to build skills for use at work. Annotations were added in the margins to draw attention to what may need to be further explored.

At this stage, I used Bates' (1989) *berrypicking* technique when gathering my sources. Bates (1989) states that online resources provide for a complex search environment in terms of types of sources and techniques to search for these sources. Berrypicking techniques I utilized included (a) footnote chasing, where I reviewed citations and reference lists in articles I deemed valuable and followed up on them; b) journal runs, where I searched for other journal editions similar to the one that I located; and (c) citation searching, where I looked at relevant citations and located other instances where they had been cited in other publications (Barroso et al., 2003).

The berrypicking technique produced about fifteen more resources, which included peer reviewed journals, books, proceedings of international microlearning conferences, as well as blogs and other white papers on websites. The varied sources accessed were published from 2004 to present, in an attempt to gain perspective on how microlearning has evolved. Gaining varied points of view over a period of 15 years also assisted when later ascertaining the reliability of chosen microlearning best practices. When sources across a wide time frame presented the same approach, the consistency made it possible to "judge the quality of the study" (Golafshani, 2003, p.601), which increased the reliability of later results. Unfortunately, there were very few occurrences in peer reviewed literature that contained scenarios where microlearning was used and resulted in measurable learning. The absence of reliable examples of how microlearning had a positive impact on employee training made it more difficult to convincingly display

that microlearning is the best approach to workplace skills development.

My research question was then modified to include middle managers as the focal employee. A search using the same berrypicking technique was then conducted, specifically focusing on training and middle managers. I attempted to determine common tasks for middle managers in the private sector, as well as skills that are commonly required to perform the job effectively. Most articles were peer reviewed, and the majority were published in the last twenty years. Attempts were made to find articles across varied workplace industries, in order to aid in the reliability of later analysis on common workplace tasks middle managers perform, as well as essential skills required to be successful in the role. After choosing relevant articles by scanning and reading the abstracts, the chosen articles were read in full and highlighted.

Next, I created a Microsoft Excel document, and separated it into a middle manager section and a microlearning section. Columns for title of article, author(s), year, key terms and other notes were created. More than 50 articles were initially scanned, with a focus on highlights and annotations. Items directly relevant to my research questions were copied into the Excel document. For the microlearning section, terms relevant to leading practices were added, and notes for other potential articles that may be prudent to review were added. Within the middle manager section, common tasks, company requirements for middle managers, and skills that may or may not be essential in order to complete these tasks were included. Berrypicking was used throughout the process of gathering information, and even after I began adding notes to the Excel document, more articles were discovered, reviewed, highlighted, and added. Thirty-six articles were ultimately analysed in the final Excel document.

Validity and Trustworthiness

In order to evaluate middle manager articles for validity and trustworthiness, each chosen article was then scanned again in order to review the situations and participants of the studies conducted. In particular, articles that gave "clear descriptions of the culture, context, selection and characteristics of participants" (Elo, Kaariainen, Kanste, Polkki, Utriainen & Kyngas, 2014, p.6) were then selected. Knowing that researchers were diligent when performing their studies was important, and the trustworthiness of articles can be more easily verified when details of the sampling method and participants themselves is precisely outlined (Elo et al., 2014). Additionally, finding articles that displayed adult workplace learners in varied contexts was beneficial when later making generalizations about the roles and skills of middle managers.

In the case of microlearning articles, authors who had published multiple articles were selected when possible, as well as choosing researchers who were referenced in other articles on microlearning. As microlearning is a relatively new learning approach, having authors who have not only published multiple articles, but also have been recognized by their peers, bolstered the trustworthiness of their claims when determinations were later made in an attempt to answer this study's research questions.

Analysis of Data

Subsequently, the entire Excel document was printed out, and a systematic scan was conducted, in an attempt to locate terms relevant to middle manager skills, workplace tasks, as well as microlearning best practices. Skills, tasks, and best practices that appeared on multiple occasions were documented, and the frequency to which they were referenced in the reviewed articles was collected. When it was determined that

multiple authors agreed, ideas were then organized, with particular attention paid to the context and specifics of each statement. If best practices for microlearning weren't referenced in four articles, further berrypicking was conducted. This resulted in the removal of some best practices as well as the addition of new ones.

Different headings for different sections of the findings were then established, and information was added from the selected references. The research questions were constantly taken into account when making choices, and edits were constantly made in situations where writing diverted from this focus. As leading practices in microlearning revealed themselves upon repeated review and analysis, the articles that were referenced were revisited, with a focus on context and applicability to both middle manager training as well as when viewed through the lens of andragogy.

Chapter 4 – Findings

Introduction

Within this chapter, findings and themes are revealed that have resulted from a qualitative meta synthesis on best practices when using microlearning to build skills in middle managers. Categories of findings include: (a) the role of middle managers, (b) skills of a middle manager, (c) microlearning and the needs of a middle manager, (d) informal learning and adults, (e) microlearning best practices, (f) short videos, (g) tagging, (h) wikis, (i) situational mentoring, and (j) barriers to success.

The role of the middle manager

Middle managers are portrayed as employees who are often responsible for implementing the strategic decisions of an organization (Abugre & Adebola, 2015; Currie and Proctor, 2005; Feltrinelli, Gabrielle and Trento, 2017; Floyd, 1992; Guo and Calderon, 2007; Kantner, 1982; Qiao and Wang, 2008;). Currie and Proctor (2005) add that middle managers are uniquely positioned in that they often participate in both the thinking as well as the doing of strategy. Moreover, being in this position requires a very specialized set of skills, with a strong ability to communicate (Huy, 2001; Qiao & Wang, 2008). Unique to this role is a responsibility to champion alternatives and synthesize details on company operations when communicating with upper management, as well as attempting to facilitate adaptability and implement the strategy itself when directing subordinates (Floyd, 1992).

Moreover, middle managers can be promoted simply as a reward for time spent at the organization, and in many cases they are not adequately trained for what is required for their new position (Garwood, 2012). It has been shown that many middle managers

learn these skills on the job, but often seeking help can be seen as a weakness (Garwood, 2012). Well run companies, on the other hand, have supportive managers who encourage mentorship and sharing of best practices as well as opportunities to learn from the experiences of trusted colleagues (Garwood, 2012).

In addition, middle managers have an essential role to play in situations where companies are undergoing change as well as often being supporters of new technology tools. Kantner (1982) states that they are comfortable in instances of change, while Huy (2001) maintains that middle managers thrive in change contexts. Middle managers may also foster growth and innovation (Kantner, 1982), manage the tension between continuity and change (Huy, 2001), and champion alternatives (Feltrinelli et al., 2017). With regard to innovation and being competitive in the industry itself, middle managers can also be leaders and chief advocates for how new technology can be used to improve communication and efficiency at work (Abugre & Adebola, 2015; Feltrinelli et al., 2017; Guo & Calderon, 2007).

Subsequently, solving problems and resolving conflicts when managing subordinates is also a common middle manager role (Abugre &Adebola, 2015; Currie & Proctor, 2005; Guo & Calderon, 2007; Huy, 2001; Qiao & Wang, 2008). Middle managers are sufficiently disconnected from the frontline workers that they gain a wider perspective on the overall company vision, allowing them to see new possibilities when attempting to solve problems (Huy, 2001). Furthermore, a middle manager's ability to "resolve these problems, and promote and sustain effective quality improvement efforts is vital to organizational success" (Guo & Calderon, 2007, p. 79). Feltrinelli, Gabrielle and Trento (2017) suggest that training that uses virtual situations that simulate actual

problems middle managers encounter can be particularly effective when helping them to develop and refine the ability to solve problems.

Skills of Middle Managers

Both the literature review and the details on the role of the middle manager above make reference to the fact that much of what a middle manager does is related to communication and dealing with people. With regards to skills essential to being a successful middle manager, having strong emotional intelligence (Huy, 2001) and being motivated to continuously learn and get better (Qiao & Wang, 2008) seem fundamental to prosperity in the role. Middle managers also need to have the ability to inspire, motivate, and empower others (Abugre & Adebola, 2015; Qiao & Wang, 2008). Leading by example through continued learning, being accessible, and being consistent (Currie & Proctor, 2005; Kantner, 1982) uniquely offers middle managers an opportunity to galvanize their staff. They also need to possess the capability to build trust, garner respect, and develop relationships with staff members (Irvine & Brundrett, 2016). Having this ability will also help to build social capital (Huy, 2001), which is the ability to make others feel comfortable approaching you with questions without being asked.

Competent middle managers also embrace the role of a change maker. Huy (2001) argues middle managers should be flexible and versatile, while Qiao and Wang (2008) mention how important it is to be flexible. Moreover, Guo and Calderon (2007) support the sentiment that middle managers should be comfortable in situations where they need to take risks.

Microlearning and the needs of Middle Managers

Microlearning is an approach to training that aligns with how people live and learn today (Paul, 2016). When it comes to workplace learning contexts where what is learned will be directly and immediately put into practice, microlearning has been identified as twenty percent more effective with regards to knowledge retention as compared to traditional formal learning situations where instructors teach staff in a classroom context (Giurgiu, 2017). Middle managers need to be continuous learners (Qiao & Wang, 2008), and learning *just in time* could prove to be advantageous for an employee who is constantly encountering change and guiding others to achieve results.

Middle managers have a long list of responsibilities, many of which revolve around communication and are soft skill related. Emerson and Berge (2018) state that microlearning is effective when building problem solving and communication skills. Kovachev, Cao, Klamma & Jarke (2011) observe that when microlearning is developed effectively it can be very efficient when filling knowledge gaps, particularly those identified through real life practice. Microlearning is a quickly growing method for leaders in change management such as middle managers, and is seen as a modern training response to the necessity of work based learning (Jomah, Masoud, Kishore & Aurelia, 2016). Unfortunately, one major obstacle to measuring the success of any form of workplace training, microlearning included, is a "lack of literature on the theoretical link between training and organizational performance" (Feltrinelli et al., 2017, p. 296).

Informal learning and adults

John Dewey introduced the concept of informal learning in 1938 (Garcia-Penalvo, Colomo-Palacios & Lytras, 2012). A modern interpretation of informal learning is that it

is a combination of learning through observations of others, asking questions, learning through making mistakes, as well as sharing stories (Garcia-Penalvo et al., 2012). Informal learning attempts to flexibly integrate learning into daily life (Buchem, 2010; Chisholm, 2005; Schmidt, 2007), and middle managers who can benefit from learning through the experiences of trusted colleagues (Garwood, 2012) may only have the opportunity to do so through spontaneous, unstructured learning.

Moreover, middle managers as continuous learners (Currie & Proctor, 2005; Kantner, 1982; Qiao & Wang, 2008) also personify the mature adults outlined in Malcolm Knowles' framework of andragogy (Knowles, 1984). Adults are characterized as being intrinsically motivated, and gaining in self-direction as they evolve and take on new responsibilities (Darden, 2014; Knowles, 1984), which can be linked to an informal learner who sets their own objectives in an attempt to improve on their skills (Cross, 2009 as cited in Garcia-Penalvo et al., 2012). Moreover, andragogy states that an adult's interest in learning increases as their social roles develop, in addition to seeking problem centred learning situations (Darden, 2014; Knowles, 1984). Middle managers may have a larger social role in an organization than they had prior to being appointed to the role, and informal learning in microlearning environments can support specific learning needs (Anil Job & Slade Agalo, 2012; Buchem, 2010; Jomah et al., 2016; Schmidt, 2007) that may emerge through everyday challenges at work.

Microlearning Best Practices

Microlearning practices can help middle managers to seek out self directed solutions to skills they independently identify as important to be successful in their job

(Fox, 2016). Microlearning activities are also easily accessible on demand (Buchem, 2019; Donahue, 2016; Emerson & Berge, 2018; Kerres, 2007; Schmidt, 2007), allow learners to revisit multiple times (Fox, 2016), as well as potentially support ongoing professional development (Buchem, 2010). Similar to Knowles' (1984) belief that informal learning methods are best used when practicing and refining what has been learned, Emerson and Berge (2018) and Paul (2016) agree that microlearning is best used to supplement what employees already know, helping the user to polish a particular skill set to make it more automatic. Microlearning also requires learners to be mature (Schmidt, 2007), and is commonly used in leadership type training (Mathis, 2018) such as that of middle managers.

Short Videos.

Microlearning using short videos was the most commonly referenced learning tool, and was referred to in the work of Alqurashi (2017), Donahue (2016), Emerson and Berge (2018), Giurgiu (2017), Hug (2005), Jomah et al. (2016), Mathis (2018), and Paul (2016). The Web 2.0 concept of co-creation of content and collaboration (Buchem, 2010) also applies, as videos are easy to make on mobile devices. Microlearning video libraries can additionally break down boundaries between users and authors, allowing for content to be modified and reused (Kerres, 2007). Metadata can additionally be used to track which videos are being accessed, allowing those who seek out the videos to know which ones have been most useful for others in the past (Paul, 2016).

Tagging.

Tagging has also been identified as being a commonly used best practice for learning in microlearning contexts. Published works of Buchem (2010), Emerson and

Berge (2018), Jomah et al. (2016), Kerres (2007), Kovachev et al. (2011), and Lindner (2007) all mention tagging as a compelling means to organize and characterize microcontent, making it easily accessible. Kovachev et al. (2011) contribute that tagging can be arranged according to context, frequency, recentness, preference, semantics, and feedback. Hartley (2010) used the success of the microsharing tool Twitter as an example of how tagging can efficiently track industry trends and topics, create value for learning leaders, as well as be used as a performance support tool.

Wikis.

Wiki social software tools have been referenced in the work of Schmidt (2007), Buchem (2010), Kerres (2007), Andriole (2010), and Emerson and Berge (2018). Wikis are a way of collaborating, aggregating, remixing, and repurposing content to help meet individual needs (Buchem, 2010). Wikis were the most utilized of all Web 2.0 technologies in a 2010 study of predominantly US companies across varied industries (Andriole, 2010). Schmidt (2007) observed that wikis are environments where articles can be tagged and bookmarked to make searching easier, and can be characterized using metadata based on maturity. The interlinked nature of wikis and openness by which content can be created also connects well to the flexible concept of microlearning, which attempts to reduce overflow of information by structuring it into sequences and strings (Bruck, 2005) that are loosely joined, and constantly being changed, re-arranged, and circulated (Lindner, 2007).

Situational Mentoring.

Mentorship as a practice in microlearning environments is described in the work of Garcia-Penalvo et al. (2012), Kerres (2007), and Paul (2016). More specifically, the

approach of situational mentorship is detailed in work by Emerson and Berge (2018) and Hartley (2010), as "quick hitting, short term collaborative learning relationships that stimulate creative solutions" (Hartley, 2010, p. 43). Hartley further details the process of situational mentorship by noting that learners first identify the situation and issue they need help with. They then connect with volunteer experts in their field through a database, who can act as advisors. Working with one to three advisors collaboratively in a virtual context, they discuss the situation, and work out a quick project plan to explore a potential solution. Learners are then encouraged to demonstrate the solution they came to and pay it forward (Paul, 2016) by tagging, indexing, or storing it in a database where others can benefit from this learning themselves (Emerson and Berge, 2018). Emerson and Berge (2018) and Hartley (2010) also refer to situational mentoring as being ideal for building tacit knowledge, which is wisdom and judgment developed through experience in a context where interaction with others occurs. This type of knowledge is seen as essential for middle managers in the work of Abugre and Adebola (2015), and they state that "middle managers are the custodians of tacit knowledge which is essential for strategy formation" (Abugre & Adebola, 2015, p. 547).

Barriers to Success

There are though some potential challenges to the implementation of microlearning. First, using Web 2.0 tools such as wikis in a microlearning environment to build workplace related skills rely heavily on the user's enthusiasm and interest in sharing information (Milovanovic et al., 2012). Additionally, new middle managers, who may be considered novices, may find highly contextualized microlearning content to be

incomprehensible due to a lack of background knowledge (Schmidt, 2007). Similarly, in order for learners in microlearning environments to evaluate and create learning content, they already need to understand the subject (Goschlberger, 2016). Finally, from an organizational standpoint, there are "serious concerns about intellectual property, proprietary information, privacy, security, and control" (Andriole, 2010, p. 73) when using Web 2.0 tools.

Chapter 5 - Analysis

Introduction

This chapter presents conclusions on how microlearning can be used for workplace skills development in middle managers based on the findings detailed in Chapter 4. Sections of Chapter 5 include: (a) how informal learning such as microlearning can be used to train middle managers, (b) analysis of andragogy as a theoretical framework when framing this study, (c) potential challenges when implementing microlearning, and (d) recommendations for implementation of microlearning when training middle managers.

Training Middle Managers

Middle managers have a complex set of responsibilities, and need to be highly motivated (Abugre & Adebola, 2015), embrace change (Huy, 2001), and be continuous learners (Qiao & Wang, 2008). Middle managers are often required to possess soft skills related to communication and leadership, and can benefit from learning from the experiences of colleagues (Garwood, 2012). Unfortunately, middle management training frequently lacks a leader-reinforcement component, which can assist in building new skills (Fox, 2016).

Informal Learning and training Middle Managers

For middle managers, who have a challenging task of mediating between the focal strategy of their organizations and day-to-day operational behaviour of their subordinates (Currie & Procter, 2005), an informal learning approach can be beneficial. Merriam, Caffarella, and Baumgartner (2007) estimated that well over 50 percent of learning that

occurs in employment contexts is informally acquired. Moreover, informal learning is flexible and efficient when filling knowledge gaps, many of which can only be self identified through personal experiences (Kovachev et al., 2011). Communication, conflict resolution and relationship management skills, identified as essential for middle managers (Qiao & Wang, 2008), may need to be refined, and flexible informal learning, acquired quickly when self identified, can effectively fill these gaps.

Microlearning for training Middle Managers

Microlearning is an informal learning approach that has proven to be practical when integrating learning into everyday life (Chisholm, 2005). In a Web 2.0 era where new digital technologies promote the creation of user generated microcontent that is short, simple and targeted (Buchem, 2010), microlearning best practices such as the use of short videos can assist middle managers when attempting to gain valuable skills relevant to their position. As middle managers encounter problems that need to be solved or are required to delegate to subordinates, short instructional videos, which display similar situations and the manner by which others have successfully overcome these challenges, would be advantageous. Moreover, these short videos can make learning more attainable and promote metacognition (opportunities for personal reflection; Donahue, 2016).

Additionally, having access to a characterized library of learning materials in the form of a wiki, an RSS feed, or through a digital system that utilizes tagging to make text based or multimedia content easily accessible, can prove to be greatly valuable for middle managers. Wikis and other Web 2.0 technologies can help preserve institutional knowledge, reduce training costs, and address problems when they occur (Milovanovic et

al., 2012). The use of tagging in microblogging platforms such as Twitter promote efficient knowledge distribution for those creating content, as well as streamlining the organization of multiple personally relevant resources for those seeking to gain knowledge (Kovachev et al., 2011). Furthermore, well-designed and characterized microcontent that is accessible with a keyword search allows for learning to be interwoven into a working day, which is useful for those seeking to address personal knowledge gaps just in time. Middle managers who find themselves challenged when tasked with responsibilities like building trust in subordinates (Irvine & Brundrett, 2016) can locate resources by utilizing keyword tags, allowing them to learn from the experiences of others quickly in order to better perform at work. Microlearning tools such as tags or wikis, when used in workplace settings for learners such as middle managers, puts learners in control, which inspires them to seek out solutions to increase their skills and improve productivity (Fox, 2016).

Situational mentoring, and how it enables a middle manager to interact with and gain wisdom from a more senior manager when encountering challenges, is another microlearning best practice. Although connecting with an advisor to develop solutions to a problem may not be attainable in one short interaction, it can stimulate innovative and creative solutions, which can then be distributed back into the greater community, making it easily accessible and repurposed in like contexts (Hartley, 2010). This can be valuable for middle managers, who may be required to possess tacit knowledge (Abugre & Adebola, 2015), but may lack the experience that is required to acquire this knowledge.

Andragogy and this research

There are some assumptions within Malcolm Knowles' (1984) development of andragogy that are directly applicable to how microlearning can be used to build skills in middle managers, but there have also been modern developments in the theory as well as a newer theory of heutagogy that need to be taken into account.

Knowles' (1984) assumption that adults become less dependent and more self directed as they mature and evolve is ideally suited to a middle manager learning using microlearning, as microlearning requires learners to seek out learning as they identify their own inadequacies or challenges. This type of learner should also be intrinsically motivated (Knowles, 1984; Darden, 2014), and middle managers need to be self motivated when finding microcontent to help deal with complex skills they need to be successful.

A later development of andragogy by Bye, Pushkar & Conway (2007) is also applicable to using microlearning to develop skills in middle managers. Bye et al., (2007) stated that adults are goal oriented and seek out learning that has a practical application to life. Middle managers have many responsibilities, and can benefit from learning that can be accessed on demand and used immediately to assist them when fulfilling the needs of their position.

Finally, John Henschke, who studied under Malcolm Knowles at Boston University, feels changes need to be made to update andragogy (Henschke, 2015). Henschke (2015) feels that although andragogy has been widely accepted, it still makes reference to a teacher-learner relationship, which is not representative of many modern learning approaches using technology. This is applicable to the use of microlearning, in

which the learner is expected to seek out self-directed solutions to problems (Fox, 2016). Moreover, Henschke (2015) suggested that heutagogy is more applicable to learning in the 21st century, as it requires the learners themselves to select what and how their learning should occur. Hase (2012) contributes that heutagogy is the study of self-determined learning, and adds that in heutagogy learning occurs when the learner is ready to learn rather than when the instructor chooses that learning should take place. Similarly, microlearning is small, specific chunks of information delivered on demand across various media platforms (Emerson & Berge, 2018), and is suited to contexts where learners are intrinsically motivated to learn while at work.

Challenges with Microlearning Implementation

Although microlearning has the potential to create flexible and easily accessible learning environments, there are also elements including: (a) time and effort to locate and develop content, (b) quality assurance, (c) active involvement of employees, and (d) a lack of literature displaying measurable learning using microlearning that may deter companies from adopting it for workplace skills development.

Firstly, content needs to be developed, refined, and repurposed effectively in order to be reliable (Schmidt, 2007). Useful microlearning resources such as videos may be developed within the organization, but it may take some time to create and edit these resources. Moreover, resources accessed outside of the organization may require time and financial resources to acquire. The quality of these resources and their applicability to the organizational context will also need to be evaluated.

Likewise, in order for microlearning and its use of Web 2.0 tools to be compelling, the organization using it will often require active involvement of learners and

staff in the development or characterization of the learning materials (Anil Job & Slade Ogalo, 2012; Buchem, 2010; Giurgiu, 2017). Requiring staff members to be participants and contributors may be met with resistance, and the perceived time required to develop the resources to address the needs of employees such as middle managers may affect the degree to which microlearning will be fully adopted.

Though innovative and practical when building workplace skills, another major barrier that may prevent companies from embracing microlearning is the lack of published studies into how best it can be applied. Although Web 2.0 tools such as videos, blogs, wikis and microblogging when used for informal learning have all been determined to be effective when filling knowledge gaps (Kovachev et al., 2011) and improving retention (Alqurashi, 2017), many companies may not participate in studies on the effectiveness of Web 2.0 informal learning tools due to the sensitive nature of company data (Milovanovic et al., 2012). The resulting lack of published studies exhibiting successful application of microlearning strategies in workplace contexts make it considerably more difficult to prove succinctly that this method of learning should be adopted by companies for workplace skills development.

To conclude, although challenges exist when implementing a microlearning strategy in a workplace context, there is a compelling breadth of literature supporting how microlearning can be effectual in filling knowledge gaps flexibly and on demand (Anil Job & Slade Agalo, 2012; Buchem, 2010; Fox, 2016; Khan, 2007; Schmidt, 2007). Furthermore, successful evidence of growth in its use can already be seen in organizations such as Axonify, whose microlearning platform is now employed in 95

countries around the world, resulting in a 36 percent increase in company revenue in 2018 (Axonify, 2019).

Recommendations

In order for microlearning to best benefit middle managers, a number of factors need to be in place. Firstly, for any sort of informal learning (such as microlearning) to be successful, the organizational culture needs to value, nurture, and be supportive of the informal learning choice (Yanchar & Hawkley, 2015). Likewise, as microlearning promotes the use of Web 2.0 social software tools that require active participation in how content is created and distributed (Giurgiu, 2017), those involved need time during their work day to develop or comment on content such as videos, tag useful sources, or to add details to wikis. Building microlearning into a middle manager's daily work day can be useful in refining and practicing what has been learned (Garcia-Penalvo et al., 2012), but for microlearning tools such as wikis and videos to be integrated properly into a workplace, the organization needs to fully endorse the microlearning approach to learning.

Secondly, when utilizing tools such as wikis and other technology that use tagging for characterization, the content itself needs to be carefully coded using metadata and other resource description framework based languages. Careful coding allows for enhanced search and functionality when navigating, which aids in connecting learners with the content they seek (Milovanovic et al., 2012). For middle managers, to have content which is compatible with their needs and skills is important, and when attempting to learn skills for use at work while at work, having ways to access it quickly through

searching for keywords, for example, will greatly aid in filling knowledge gaps on demand.

Additionally, content must also be characterized or coded according to maturity, as well as provide learners with analytics on the degree to which content has been accessed and applied by others in order to determine its effectiveness. Having a library of content that is well organized and easily accessible will help to create a situation where learners can locate what they are seeking in a reasonable time, further encouraging the integration of microlearning directly into the work flow. Moreover, ensuring that microcontent is accessible through mobile devices such as tablets and phones will allow for effortless access, which will increase engagement.

Finally, the use of employee profiles would be advantageous when exploring situational mentoring. As employees of an organization contribute to an online microlearning system (blogs, wikis etc.), a profile can be created for each employee, detailing their contributions, and determining their expertise in certain areas. These characteristics could be then utilized when a middle manager (or other employee) seeks a mentor when dealing with a workplace related problem, as the system would make recommendations as to who has the most experience, to provide perspective and knowledge on the matter.

Chapter 6 - Research Implications

Introduction

This final chapter gives specifics as to how an organization may implement a microlearning strategy when training middle managers. Additionally, implications for not implementing this strategy and future research considerations are outlined. The chapter culminates with a conclusion to the conducted research.

Implementation

Implementing a microlearning approach in a workplace context where it has never been utilized previously could prove to be challenging. Not only do staff members need to contribute content and participate in knowledge management in microlearning environments, but the content itself is predominantly digitally transmitted, which will require employees to learn in different ways using different tools. Having organizational support when adopting this new approach is important. In addition, a company that does not possess knowledge on how to effectively build and then integrate microlearning could potentially encounter resistance from staff when using it.

In order to successfully implement a microlearning approach when training middle managers, firstly it is advisable to enter into a contract with a microlearning platform creator such as Coursmos, Grovo, Yammer or Axonify. At the outset of integrating a microlearning approach, gaining the insight on how to select and develop activities using best practices as well ways to inspire employee commitment could assist organizations when understanding how to use microlearning effectively.

Secondly, organizations could identify some senior leaders in different departments to work together with the microlearning platform staff to begin to understand the functionality of the microlearning system, as well as when determining initial resources to include. As informal learning such as microlearning relies on the user's willingness to share information with colleagues (Milovanovic et al., 2012), it will be important for senior staff to lead by example in order to inspire middle managers to attempt to learn using microlearning. Yanchar and Hawkley (2015) outlined the important role that informal learning such as microlearning plays in workplace effectiveness, and having senior staff showing interest and displaying how microlearning can be helpful could aid in building enthusiasm in middle managers.

Thirdly, middle managers and other staff could be required to access some learning materials in the system in order to familiarize themselves. It has been established that content in microlearning is more useful when personalized and promotes conversation on topics (Bruck, Motiwalla & Foerster, 2012). As a result, giving employees time to not only explore the microlearning platform, but also to actively contribute resources, learn how to tag items, and to participate in the learning community as part of their regular working day could increase motivation as microlearning is further developed in the organization. Furthermore, a well-designed microlearning environment that uses tags to characterize content and arrange it logically can be easily accessed later (Kovachev et al., 2011), which could potentially reduce frustration for learners when attempting to learn in the context of a busy workday.

Finally, involving staff in the review of content in the organization's microlearning platform on an ongoing basis could help to improve the quality of the

content itself. Schmidt (2007) stated that microlearning is most effective when both the learners and the content are mature. When employees are given time to mature and gain confidence with the system, be included in what content in the microlearning environment is deemed significant, as well as what content requires modification or removal, an organization's microlearning content and system could benefit. This could increase the maturity of the content in the organization's microlearning platform.

Implications

Companies who don't embrace new approaches and technologies such as microlearning risk losing their share of the market. Friedman (2005) argues that the ability to innovate successfully decides the survival of companies, communities and nations. Although training middle managers is essential for executing critical business strategies, training middle managers receive often doesn't have a meaningful impact on the success of a business (Fox, 2016). A study by McKinney et al. (2013) also found that 67 percent of organizations surveyed believe they need to train middle managers differently. Furthermore, microlearning is growing rapidly and gaining in importance for training management professionals (Jomah et al., 2016). In a world with humans with eight second attention spans (Donahue, 2016), training needs to transform to match changes in humans. Finally, organizations that don't modify training to incorporate microlearning approaches and social software tools could potentially waste valuable funds for training, face a decreased degree of employee engagement in training, as well as lose the ability to retain valuable knowledge from employees that can then be used to train future staff members.

Future Research

Further research could be conducted into the actual integration of microlearning at workplaces. Very few studies presented instances where microlearning has been wholly adopted successfully, and a lack of examples could affect the interest in microlearning as an alternative to other training methods. Moreover, concerns by companies about the sensitive nature of intellectual property, privacy, control, and security (Andriole, 2010) may have had an impact on adoption of microlearning approaches. Additionally, microlearning platforms such as Axonify, Coursmos, Yammer and Grovo are protective of their intellectual property. A lack of knowledge by many companies about best practices when utilizing microlearning as well as the cost associated with contracting a company to use their platform may also create barriers to adoption by organizations. Furthermore, measuring performance improvement through informal means such as microlearning has proven to be extremely difficult in the past (Milovanovic et al., 2012). Additional research into how organizations have effectively integrated microlearning approaches using Web 2.0 tools could help to increase interest in the approach, as well as instances where microlearning has resulted in measurable performance improvement in employees.

Conclusion

My research has revealed many characteristics inherent to the role of a middle manager, established skills middle managers need to be successful, as well as making a link between four key microlearning best practices and middle manager training using andragogy as a theoretical framework. Skills required to be a middle manager are vast, and most of them are soft skill related, such as implementing the strategic decisions of the

organization (Abugre & Adebola, 2015; Currie & Proctor, 2005) and having a strong ability to communicate (Huy, 2001; Qiao & Wang, 2008). All middle managers bring different soft skill abilities to the position, and some have been promoted only as a result of time spent (Garwood, 2012). As a result, middle managers may be lacking in essential skills such as being a leader and the ability to delegate and motivate others. My research has determined that a microlearning approach where learners acquire knowledge to build skills just in time is ideally suited to the needs of middle managers. Twenty first century workers are required to utilize technology to interact with others, as well as to complete daily tasks, and training too needs to adapt to these changes (Marius, 2012). In order to be effective, microlearning needs to be adopted as part of an organizational strategy, and employees need to be given time to contribute content and interact with other staff members to share knowledge.

Research conducted during this qualitative metasynthesis has revealed that microlearning through short videos, tagging and characterizing of content, wikis and situational mentoring are best practices to aid middle managers when building workplace skills. Though relevant and effective, research displaying the measured success of microlearning and how best to design learning using the above best practices was not evident. Although growing in popularity, an absence of studies displaying this successful implementation of microlearning for workplace skills development will restrict its growth as a replacement for formal training.

As approaches, methods of implementation, and measures of growth in employee and organizational performance with microlearning become more evident, instances of its use will increase. With this increase, if the results can be demonstrated to be effective,

more and more organizations will adjust their training approach, using technologies and methods of communication and knowledge management more aligned with the way that 21st century humans interact and gain knowledge outside the confines of the workplace.

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