MOBLOGGING TYPE AND ITS RELATION WITH USABILITY AND DEVELOPMENT OF KNOWLEDGE MANAGEMENT SKILLS FOR BLIND STUDENTS

By

AKRAM FATHY MOSTAFA

Associate Professor in Instructional Technology, South Valley University (Qena) & King Abdulaziz University (Jeddah).

ABSTRACT

The aim of the research is to explore the relation of mobile Blogging (Moblogging -MB) on the usability and development of Knowledge Management skills for Blind Students. The research followed a pretest and posttest quasi experimental design .Participants were 17 blind students from the third semester of the academic year 2015 in the course of Computer Applications in Special Education. (SPED 507) - the High Diploma in Special Education (Visual Impairment branch) at the Program of Educational Graduate Studies at King Abdel Aziz University. The independent variable was MB type on two different levels: The first level independent variable is Text moblogging (TMB) and the second level independent variable is Audio Moblogging (AMB). Both quantitative and qualitative data were collected, including Knowledge Management skills test and usability measurement scores. Findings indicated that AMB participants performed significantly better than TMB in Knowledge Management skills and there are no significant difference between the medium range degrees of student average scores for the first experimental group (TMB) and second experimental group (AMB) in the usability measurement for blind students related to MB type.

Keywords: Mobile Blogging (Moblogging), Knowledge Management Skills, Usability , Learning.

INTRODUCTION

Mobile technology is not only for interactive use but also for gaining prominence in Education. The application of mobile technologies to learning has the potential to facilitate the active participation of learners in the creation and the delivery of content. Mobile technologies can also provide a powerful connection between a variety of formal and informal learning contexts and can help to build a community of learners. However these versatile tools present challenges to Educators and Learners (Anna et al., 2009).

Potential of mobile Web 2.0 tools is to enhance both the formal and informal teaching and learning environments with a focus upon mobile blogging (Cochrane 2010). A comparison of student and teaching staff feedback from each of the three projects provided a basis for identifying and illustrating critical success factors within similar M-learning scenarios. Critical success factors identified the importance of the pedagogical integration of the technology into the Course assessment, Lecturer modelling of the pedagogical use of the tools, the main page of MB included link of a personal pages and classification by student registration.

The MB system is useful and it furnishes good impact on the student's learning effect in collaborative learning environment, which is working with peers in the classroom and in the field as well as with students from other schools or countries towards a common outcome. In a mobile blog environment, students need not meet each other, instead they can make the collaboration effort to accomplish the learning goal of the lecture (Huang, et al, 2009).

Huang et al. (2009) designed a mobile blog system, which enables mobile bloggers to publish their comments in authentic context anytime and anywhere. The author shows that with the help of mobile blog system, the author can establish a collaborative learning model for students in virtual classrooms. The results revealed from the learning outcome are positive and encouraging regarding the effectiveness of the supported collaborative learning model. In the conclusions, authors discuss the findings and

applications of the proposed system in collaborative learning.

The blind can be benefitted from the internet, through some kind of technology that enables him to browse through internet browser by moving between the sites, uploading, downloading files, filling out forms, and connecting with others via Social Networking platforms.

The blinds are dependent on mobiles not just to contact others but for many other tasks tasking such as getting information from internet to be employed on a variety of career aspect. The blind can contact with MB by using screen touch program to listening audio file, and interact with MB by writing from touch keyboard or sound recording program.

The differences between mobile devices and desktop computers are based on their usability considerations. According to Budiu and Nielsen (2011) the main obstacles to mobile usability are download delays, small screens, and awkward mechanisms for providing input, especially for typing.

Knowledge Management Skills (KMS) are important for blinds, because KMS plays a very important role in improving individual skills and ability, both by individual and organizational; KMS improves their competences. The roles of KMS are positively correlated to the values of KMS for individuals and organizations (Cheong & Tsui 2010). KMS is managing the key information/knowledge so that it can be easily accessible when needed.

Priti, (2011) explains the benefits to both individual and organizational as Improved productivity and performance; Continuous innovation; Effective decision making; Internal knowledge dissemination; and External information awareness. Thus, the major KMS skills can be characterized as Life-Long Learning skills; Manage learning skills; Information literacy skills; Networking and collaborative skills; Research and observation skills; Communication & visualization skills; Creative and innovative skills; Latest information and communication technology skills; and Information management skills.

The need for the study arises from the blind students who need development and Knowledge Management by selecting which of the MB type is suitable for the blind-TMB or AMB.

1. Literature and Theoretical Review

1.1 Defining Moblogging (MB)

MB is a method of publishing to a website or blog from a mobile phone or other handheld device. A blog is maintained by using a mobile device, MB has been made possible by technological convergence such as blogger, WordPress, Tumblr, Weebly. MB has been able to write record and upload different media from a single, mobile device. At the height of its growth in 2006, mobile blog experienced 70,000 blog creations a day and 29,100 blog posts an hour(Cemerlang et al,2006).

Beale (2006) suggests the key principles that were developed after assessing bloggers' needs. These include:

(1) Mobile client must not interfere with phone functionality

(2) Mobile blog should integrate easily with existing blogs

(3) Client device needs to utilize the multimedia capabilities of a phone and are easy to use

(4) Client should allow for management activities, such as editing and deleting

(5) Client should use cheap connectivity if available

(6) Client must cope with broken connectivity transparently.

MB helps habitual bloggers to post write-ups directly from their phones even when on the move (Knudsen, Jonathan, 2003).

1.2 Blind MB type

The MB is one of the mobile learning applications that blinds can use. The MB has introduced many services to blind such is: Improving Education quality, Reaching the databases, magazines and articles and giving the blind skills that help them to deal with different fields of life.

MB usability for blind is to explore how well a website fits with a blind user's conceptualization of completing online tasks it supports. Usability test can identify problems that annoy and discourage Mobile application users which are often connected to low conversion rates or sales. These problems can be fixed, but only after, they are identified by observing people using the website.

The blinds depended on the listening tool to understand

the content for Text Moblogging (TMB) and Audio Moblogging (AMB).

1.2.1 Text Moblogging (TMB)

The blind can understand the content by screen reader program such as (Ibsar , Hal , Jaws , Virgo), The screen readers convert the printed text to speech form as shown in Figure 1.

1.2.2 Audio Moblogging (AMB)

The blind can understand the content by recorded speech and blind listens to it as shown in Figure 2.

Table 1 shows the difference between two types of MB (TMB and AMB).

1.3 Knowledge Management Skills (KMS)

According to Professor Paul A. Dorsey of Millikin University, Knowledge Management is viewed best as based on a set of problem solving skills that have both a logical or conceptual as well as physical or hands-on component. (Avery et al., 2000).

Beckman believed that Knowledge Management consists of 8 main steps: identify, acquire, select, store, share, apply, create and sell (Beckman, 1997).

Allee articulated that Knowledge Management involves four levels: capture, sharing, application and creation (Allee, 1997)

Chen and Huang(2010) converts the Knowledge Management process into practical teaching methods. Without being limited by a classroom, learners can browse

Figure 1. Text Moblogging (TMB)

Figure 2. Audio Moblogging (AMB)

MB type	Text moblogging (TMB)	Audiomoblogging (AMB)
File type	Depended on screen reader program	Depended on audio file
File size	Small size file	large size file
listen	Listen by screen reader program	Listen by play audio program
speaker	Listen by more than voice speaker	Listen by only one human speaker
Mobile technology	Hardware :WiFi smartphone Software : blogger	Hardware : WiFi smartphone Software : sound cloud
Design	Figure 1	Figure 2

Table 1. Comparison between TMB and AMB

materials and share the experience with others. They can also personalize knowledge organization and save it. The mobile Knowledge Management learning system offers each student, a personal account storing and sharing information. It also records each student's schedule. Knowledge sharing methods should show how many articles users have posted to encourage the exchange and creation of knowledge. Group learning is recommended, so that learners can participate in an organized way. Created knowledge has been divided into application of prior knowledge and exploration of new knowledge.

Priti, (2011) also explains the KMS can be distinguished with the following characteristics:

- It focuses on personal knowledge;
- It refers to knowledge, which is important to an individual in personal, working and social capacities;
- It is the management of personal knowledge to make it easily accessible and usable; It is the foundation for

organizational knowledge management;

- It emphasizes the importance of KMS in order to improve organizational productivity; and, It is an ongoing activity.

KMS can provide the following benefits to an individual blind :

- Individuals can recognize their own value and consequently make better decisions for self-development;
- Individuals are better equipped to work and be more productive;

KMS enables knowledge-based and informed decision-making;

- Employees feel motivated if KMS tools and methods to make their lives easier and more employable;
- It makes people innovative and think critically;
- KMS identifies the personal knowledge and skill gaps and builds on capacities;

KMS manages personal human capital for professional excellence (Mart & Enache 2008; Cheong & Tsui 2010).The research organizes the Knowledge Management skills process into seven KMS skills in the proposed KMS framework by Dorsey (2001). KMS skills are: (1) Retrieving information, (2) Evaluating information, (3) Organizing information, (4) Collaborating around information, (5) Analysing information, (6) Presenting information, (7) Securing information.

The reason for choosing this framework by Dorsey (2001) is that the researcher believes that individuals who are more likely to benefit from technologies, and minimize the challenges of using technologies if they optimize these skills properly. It is obvious that not all barriers and challenges of using technologies can be solved by KMS skills because some of the challenges are out of the control of employees.

The researcher has designed two tasks of Knowledge Management skills for blind that was guided by the researcher's knowledge and experience with the blinds in the view of his studies.

1.4 MB Usability

Any system designed for people should be easy to use, easy to learn, easy to remember, and helpful to users. John Gould and Clayton Lewis recommended that designers striving for usability follow these three design principles (Gould, Lewis,1985) , Usability is how well a website fits with a blind user's conceptualization of completing online tasks it supports such as user friendly and easy to use (Babu 2011).

Bevan (2008) suggests that the definition of usability can be extended to encompass user experience by interpreting satisfaction as given by

- Likability : The extent to which the user is satisfied with their perceived achievement of pragmatic goals, including acceptable perceived results of use and consequences of use;
- Pleasure: The extent to which the user is satisfied with the perceived achievement of hedonic goals of stimulation, identification and evocation and associated emotional responses.
- Comfort: The extent to which the user is satisfied with physical comfort.
- Trust: The extent to which the user is satisfied that the product will benefit as intended.
- Usability: The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use" (Bevan 2001).

An effective usability test has to be able to elicit feedback from users on whether they use an application without (or almost without) difficulty and how they like using the application, as well as evaluate the levels of task performance achieved by users (Wichansky, 2000). However the author believe that it should be seen as an important attribute of a mobile system, when used in a certain context. This interpretation complies with the definition given in the documentation of the ISO standard, (ISO 9241-11).

As Jakob Nielsen puts it in Mobile Usability, "It's neither easy nor pleasant to use the Web on mobile devices"(Nielsen, 2009)

While sharing the view that a move beyond usability is needed in the design and evaluation of E-Systems,Dallon (2001) suggests that an emphasis on three key issues of

users 'interaction with E-Systems also requires the following.

- Process: What the user does, for example navigation through a website, use of particular features, help, etc. This allows the development of an understanding of users' moves, attention and difficulties through an E-System.
- Outcomes: What the user attains, for example what constitutes the goal and end of the interaction. This allows an understanding of what it means for the user to feel accomplishment or closure with the E-System.
- Affect: What the user feels; this includes the concept of satisfaction from the definition of usability, but goes beyond that to include all emotional reactions of users, which might be empowered, annoyed, enriched, or confident. This allows the development of an understanding of users' emotional interaction with E-Systems and what interaction means for users .

Catalin et al. (2013) shows how usability applies to several layers of a mobile system and acts differently, being highly dependent on a user education in terms of mobile systems. The layers to which usability applies are:

- User : Mobile device interactions; how the buttons are positioned; what are the nearest functions that can be made with a single push of a button describing the ergonomic characteristic.
- Operating system's usability : how well the OS manages applications, resources; what features can easily be of service when special functionalities are needed; how fast it tends to respond to user-device interactions.
- User control diversity: the power to cover as many requirements as needed by offering users control that can implement not only the basic functionalities but also combining them in order to achieve complexity with high usability.

Data validation is another layer that is strictly dependent on the usability metric, that being closely related also with the general security level.

There are several advantages of performing usability testing of MB applications (Gose, Riddle, 2014; Peterson, 2013; Babu, 2013)) and there are various guidelines for usability testing of MB , Both accessibility and usability are necessary to derive the intended utility of Mobile website.

Usability testing is often thought of as a method for finding flaws in a Mobile application such as : Questioners , focus group, prototype Test , Card sorting and heuristic usability but it also reveals what works. In a usability test, blinds who are representative of the target audience are given realistic tasks to perform with the mobile application, and what they do and what they say are observed by a research .

Bevan (2008) suggests the methods for usability that can be grouped into the following categories:

- Automated checking of conformance to guidelines and standards
- Evaluations conducted by experts
- Evaluations using models and simulations
- Evaluation with users or potential users
- Evaluation of data collected during E-System usage.

1.5 MB and Theory of Learning

Cognitive learning theory states that learning involves the use of memory, motivation, thought, and reflection (Ally, 2005). And the theory of connectives based on a critique of previous main-stream learning theories synthetically labelled as Behaviorism, Cognitivist and Constructivism (Siemens, 2004).

2. Objectives of the Research

The major aim of the research is to investigate the possible relation between MB type and development og Knowledge Management and usability for blinds.

3. The need of the Research

The need of the research is,

- This research may help MB designers by providing them suitable MB type for blind that may result is shift in technology utilization
- The usability is aimed at assessing the features usability by improving the usability for blind (Babu, 2014).
- The necessity of knowledge skills for blind from several needs: social, educational, creative, professional and informative.
- The Research supplies model that can be implemented inside different firms.

- To help the blind acquire the knowledge they share together, putting aside their specialization ,graduation to developing their skills.
- The Research is an attempt to cope with the world contemporary attitudes in using Innovation Assistive Technology for blind and many recommendations of conferences and Studies (Ally & Prieto-Blzquez, 2014; Boeckers, 2013, Tutty & Martin, 2014).

4. Research Questions

The major aim of the research was to investigate the possible relation between MB type and development Knowledge Management and usability for blind. So this research seeks to answer the following Questions:

R1: What is the effect of the MB type (TMB / AMB) on development Knowledge Management for blind student ?

R2: What is the effect of the MB type (TMB / AMB) on the usability for blind student?

5. Research Hypotheses

H1: There are statistically significant difference at 0.05 level between the medium range degrees of student average scores for the first experimental group ((TMB) and second experimental group (AMB) in the Knowledge Management skills test for blind student related to the MB type.

H2: There are statistically significant difference at 0.05 level between the medium range degrees of student average scores for the first experimental group (TMB) and second experimental group (AMB) in the usability measurement for blind student related to the MB type.

6. Methodology

6.1 Participants:

The research sample contains 17 blind students from the third semester of the academic year 2015 at the course of Computer Applications in Special Education - SPED 507 at the High Diploma in Special Education – Visual Impairment at the Program of Educational Graduate Studies at King Abdel Aziz University.

All participants signed ethics consent and acceptable use of agreements for the purposes of the research.

6.2 Independent Variables

There are two independent variables in the present research. The first level independent variable is TMB and the second level independent variable is AMB.

6.3 Dependent Variables:

The two dependent variables evaluated by this research were Development Knowledge Management skills and Usability for blind.

6.4 Experimental Design

A pre-test and post-test quasi-experiment design of the research was based on a quasi-experiment design research that employed a two factorial design. It was designed to examine the effects The independent variables were the two models of the MB and the dependent variable were development Knowledge Management skills and usability for blind as shown in Table 2.

7. Data Analyses

PSS statistical package was employed to carry out these analyses, To answer the research questions, descriptive analyses were used to Shapiro-Wilk for Tests of Normality, And Mann-Whitney (U) - 2 independent samples Test for comparison between the experimental groups (TMB and AMB) with respect to Knowledge Management skills and usability for blind.

8. Procedures

Procedures of the research were followed through an instructional design model (The ADDIE Model) which includes five main stages shown in Figure 3. The researcher modified the minor steps of main stages depended on Elgazzar (2014) ISD model for developing e-Learning environments.

These procedures could be explained as the follows:

8.1 The First Phase : Analysis

1. Adopt or establish ISD's standard for M-Learning Environment

2. Analyze targeted blind' characteristics, previous learning,

Type of Blogging	MB type	
	AMB	TMB
group	Group2	Group1
No	8	9
dependent variables	development knowledge	management, usability

Table 2. Quasi-Experimental Design

Figure 3. ADDIE Model

pre-requisite learning, Knowledge Management skills.

3. Identify instructional needs for the M-Learning environment through normative needs, content analysis, or needs' Assessment.

4. Analyze available digital resources, Learning Content, Blog Management System (BMS), and available Learning Objects (LO), obstacles, and Limitations.

Each of group that are classified according to the MB was divided into two group, one TMB and the other AMB.

8.2 The Second Phase : Design

8.2.1 Design M-Learning environment's components

- Driving instructional objectives-IO in ABCD format (Based on needs), analysis of IO and sequencing their instructional hierarchy.
- Identifying content elements for IOs and group them in modules/lessons.
- Design learning experiences: resources and activities, learner's self or group.
- Interactions, possible blending, Mobile web links, and role of teacher/tutor for each objective.
- Choosing alternative elements of multimedia for learning experiences in resources and activities, and make their final multimedia selections.
- Designing message and story boards for the selected media for resources and activities.
- Designing navigation techniques, instructional control, and learner interface.
- Designing for learning/instructional models, design variables, learning theories, collaboration/co-operation, content structures, Gagne's [14] events, or any design innovations.
- Select and design synchronous/asynchronous communication tools in/out environment.
- Design learners' registration and management, grouping and learners 'support systems.

8.2.2 Design e-Learning Environment's information and component layout

- Design layout of components, navigation, guides and help, glossaries, and M-Learning environment open/closed access.
- Design basic information: label, banner, logo, developers, and etc.

8.2.3. Design Evaluation and Tests: KMS and UM

- Knowledge Management skills test (KMS test) was developed, based on the objectives and content course by the researcher to examine blind students' knowledge management.
- The KMS test content bulit by revised variety of practical Arabic studies which in turn, designed tests to measure the Knowledge Management skills.
- And theoretically it included KMS , the skills that relate to the ability of knowing mony by voice search.
- The Expert (specialists within the field of instructional technology and in Special Education–Visual Impairment) validity was achieved through the cooperation of an experienced blind instructor and it consisted of parts like: vocabulary, grammar, listening, reading, and writing the total for each section was 60, with a total score of 60.
- The Usability measurement This scale is scored on a 70 items for Usability by Likert scale, Responses to these items were made on a Likert-type scale ranged as follow: 1 "Strongly Disagree", 2 "Disagree", 3"Neutral", 4 "Agree", and 5 " Strongly Agree" . Therefore, the total score for the test was 140. The overall Cronbach's a of the UM was 0.79 Some interesting studies on the usability testing of mobile applications.

8.3 The third Phase : Develop

1. Produce M-Learning environment components.

- Accessing/obtaining available media, resources, activities, and learning objects
- Modifying or producing multimedia, resources, activities, and other components.
- Digitization and storing multimedia elements.

2. Produce M-Learning environment's information and components layout.

3. Produce M-Learning environment prototype:

- Upload or link eLearning environment' components and external links.
- Setup lessons/modules, communication tools, and learners' registrations and grouping
- Finalize prototype and make it ready for formative evaluations

8.4 The Fourth Phase : Implementation

Before starting the experiment, the researcher arranged several meetings and discussions to help the blind to understand the research procedures, The researcher designed 4-week lesson plans and course activities for first semester.

This research adopted a pre-test and a post-test quasi-experimental design with two research groups' students who completed KMS test as pre-test at the beginning of the semester (week 1). Afterward, they completed the three tests (KMS, U and M) and interviews as post-tests for the experimental group. Figure 4 describes the data collection time line for this research.

8.5 The Fifth Phase : Evaluation

KMS and UM post-test was implemented in this phase, in addition to monitoring results and transferring them into a program SPSS 17.0, then making statistical processes, analyzing and discussing the results, are done in this research.

Pre application results showed that by using SPSS program to verify the natural distribution of the KMS pre-test for experimental groups by using Shapiro-Wilk Test results for

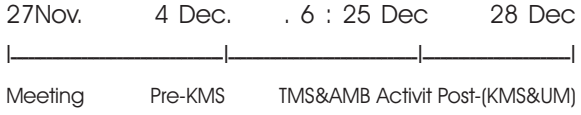

Figure 4. The procedure of the experiment

natural distribution of KMS pre- test scores ($p>0.05$) The result shows analysis outcome as in the experimental groups, there is no significant difference at the 0.05 level from the natural distribution for KMS pre-test scores.

According to these results, the data is natural distribution; hence, Mann Whitney parametric test was calculated by SPSS to complete results analysis. Table 3 displays Mann-Whitney test results, rank mean values for both groups (TMB and AMB), Z test statistical values, and observed significance.

Analysis finding showed sig=0.81. This means that there is no statistically significant differences at 0.05 level between two groups of mean ranks TMB and AMB in the KMS pre-test scores, Pre-implementation of the KMS refers to Homogeneity and Equality of the two groups of research because the two groups have the same experience because they go through this MB experience for the first time.

The actual application of the experimental study of the research is show in Figure 5.

9. Results and Discussion

R1: What is the effect of the MB type (TMB / AMB) on development Knowledge Management for blind student?

MB type Group	N	Mean Rank	Sum of Ranks	Z	U
TMB Group 1	9	9.33	84.00	.290	33.00
AMB Group 2	8	8.63	69.00		
Total	17				

Table 3. Mann-Whitney U Test between TMB and AMB

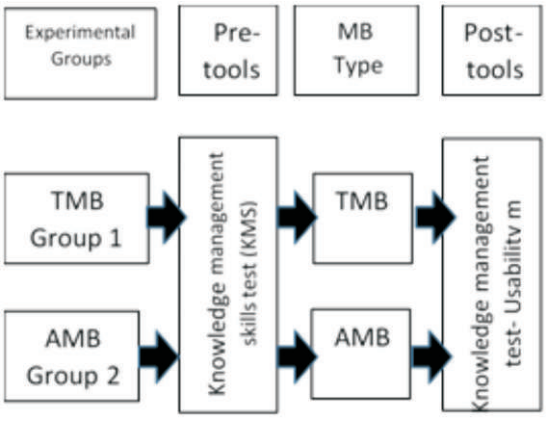

Figure 5. Experimental Treatments Design

MB type Group	N	Mean Rank	Sum of Ranks	Z	U
TMB Group 1	9	8.67	78.00	.291	33.00
AMB Group 2	8	9.38	75.00		
Total	17				

Table 4. Mann-Whitney U Test between TMB and AMB

Results showed that by using SPSS program to verify the natural distribution of the KMS test for experimental groups by using Shapiro-Wilk Test Post- test scores ($p>0.05$) The result shows analysis outcomes: in the experimental groups, there is no significant difference at the 0.05 level from the natural distribution for KMSPost-test scores.

According to these results, the data is natural distribution; hence, Mann Whitney parametric test was calculated by SPSS to complete results analysis Table 4 displays Mann-Whitney test results, rank mean values for both groups (TMB and AMB), Z test statistical values, and observed significance.

Analysis finding showed sig=0.04. This means that there is statistically significant differences at the 0.05 level between mean ranks TMB and AMB in the KMS test scores to AMB Group 2.

From the Mann-Whitney U Test result shown in Table 4, it can be discovered that KMS in AMB is higher than TMB. Therefore, AMB designed in MB can be easily recognized by blind users with their KMS. and most Arabic screen reader need more qualitative in speech text in TMB, there is no wrong speech text in AMB. So the validation of hypothesis is accepted.

R2: What is the effect of the MB type (TMB / AMB) on the usability for blind student?

Results showed that by using SPSS program to verify the natural distribution of the UM test for experimental groups by using Shapiro-Wilk Test scores ($p>0.05$) The result shows analysis outcomes: in the experimental groups, there is no significant difference at the 0.05 level from the natural distribution for usability scores.

According to these results, the data is natural distribution; hence, Mann Whitney parametric test was calculated by SPSS to complete results analysis Table 5 displays Mann-Whitney test results, rank mean values for both groups (TMB and AMB), Z test statistical values, and observed significance.

From the Mann-Whitney U Test Analysis finding showed sig=0.60 This means that there is no statistically significant differences at the 0.05 level between mean ranks TMB and AMB in the UM scores ,because MB platform offers the capability to use a phone for administration, editing and writing from a phone or smartphone browser. There are services and platforms which present different versions of a blog administration interface based on user agent.

So the the validation of hypothesis is accepted.

And Mobile blogging also promotes the dissemination of ideas and perspectives for of younger people, who previously have not had as many easily accessible platforms to present their views (Rigby, 2008).

10. Limitation of the Study

Key limitations of the study are: the use of pre test and post test quasi-experiment design that employed a two factorial design.

It was designed to examine the effects The independent variables were the two models of the MB and the dependent variable was development Knowledge Management skills usable for the blind. The limitations of the study were organized and applied to two groups of blind students (Program of Educational Graduate Studies):

- TMB Experimental group 1 (9) students.
- AMB Experimental group 2 (8) students.

AMB participants performed significantly better than TMB in Knowledge Management skills and there are no statistically significant difference between the medium range degrees of student average scores for the first experimental group (TMB) and second experimental group (AMB) in the usability measurement for blind student related to MB type.

11. Recommendation and Future Research

Recommendations for future research stemming from the

MB type Group	N	Mean Rank	Sum of Ranks	Z	U
TMB Group 1	9	8.39	75.50	.532	30.5
AMB Group 2	8	9.69	77.50		
Total	17				

Table 5. Mann-Whitney U Test between TMB and AMB

current study. MB can also improve Educational outcomes and enhance the quality of instruction for blinds. It is essential to develop and adopt MB tools to evaluate the usability of mobile applications. So far, most usability studies of blind MB deal with text and audio. Few studies have focused on usability testing of MB type applications. This raises an interesting and even more challenging research Question: How can usability of MB applications be evaluated effectively?

As the study has shown a significant effect for AMB type in the mobile learning environment. Future studies of this nature similar in connection to the current study would be to design and validate a contemporary instrument for measuring self-regulation.

Conclusion

It can be concluded from the present research that it provides effects of MB transformative mobile instructional strategy, and the evidence of suitable MB type (TMB/AMB). The AMB is suitable for blind, because the Arabic screen reader (text to speech) is developed in AMB.

Acknowledgment

The author gratefully acknowledges every participants (all 17 blind students) from the third semester of the academic year 2015 in the course - SPED 507 at the High Diploma in Special Education – Visual Impairment at the Program of Educational Graduate Studies at King Abdel Aziz University.

References

[1]. Allee, V. (1997). "Twelve principles of knowledge management". *Training & Development*, Vol. 51(11), pp 71-75

[2]. Ally, M. & Prieto-Blzquez, J. (2014)." What is the future of mobile learning in education?". *RUSC. Universities and Knowledge Society Journal,* Vol. 11(1), pp. 142-151. Universitat Oberta de Catalunya, University of New England.

[3]. Ally, M. (2005). "Using learning theories to design instruction for mobile learning devices". Learning and Skills Development Agency, *Mobile learning anytime everywhere*. A book of papers. from MLEARN Retrieved on 19 May, 2014 from http://stu.westga.edu/~bthibau1/MEDT%208484%20Baylen/mLearn04_papers.pdf#page=14

[4]. Anna Comas-Quinn, Raquel Mardomingo and Chris Valentine (2009). "Mobile blogs in language learning: making the most of informal and situated learning opportunities." *ReCALL,* Vol. 21, pp 96-112. DOI:10.1017/S0958344009000032.

[5]. Avery, S. et all. (2000). "*Knowledge Management: Framework for Integration and Partnerships*". Retrieved on 30May014from http://wwwmillikin.edu/KMS/KMSascue.html

[6]. Avery, S., Brooks, R., Brown, J., Dorsey, P., &OConner, M. (2001). "Knowledge Management : framework for integration and partnership", *ASCUE 2001 Conference Proceedings,* North Myrtle Beach, SC. Retrieved April 9, 2014, from http://fits.depauw.edu/ascue/proceedings/2001/avery.html

[7]. Babu, R. (2011). "Developing an understanding of the accessibility and usability problems blind students face in web-enhanced instruction environments". [Doctoral Dissertation]. *ProQuest Dissertations and Theses.* (Accession Order No. AAT 3473492).

[8]. Babu, R. (2013). "*Understanding challenges in non-visual interaction with travel sites: An exploratory field study with blind users"*, Retrieved on 30 May, 2014 from: http://firstmonday.org/ojs/index.php/fm/article/view/4808. [Accessed February 2, 2014].

[9]. Babu, R. (2014). "Can Blind People Use Social Media Effectively? A Qualitative Field Study of Facebook Usability". *American Journal of Information Systems*, Vol. 2(2), pp 33-41.

[10]. Beale, Russell (22–27 April 2006). "Mobile Blogging: Experiences of Technologically Inspired Design". *CHI 2006 Experience Report.*

[11]. Beckman, T. (1997). "A methodology for knowledge management". Paper presented at *Proceedings of the IASTED International Conference on AI and soft computing*, Banff, Canada

[12]. Bevan, N. (2008). "Classifying and selecting UX and usability measures". In the *Proceedings of Meaningful Measures: Valid Useful User Experience Measurement (VUUM), 5th COST294-MAUSE Open Workshop,* 18th June 2008, Reykjavik, Iceland.

[13]. Bevan, Nigel (2001). "International Standards for HCI

and Usability." *International Journal of Human Computer Studies*, October 2001; pp 533 - 552.

[14]. Boeckers, D. (2013). "Tooling Audio Accommodations in Spanish 1 for Students with Specific Learning Disabilities". In R. McBride & M. Searson (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2013* (pp. 3584-3589). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).

[15]. Catalin B., Mihai D., Paul (2013). "Impact of the Security Requirements on Mobile Applications Usability". *Economy Informatics,* Vol. (13). pp. 64-72.

[16]. Cemerlang, P; Nanyang Technol. Univ.; Joo-Hwee Lim; Yilun You; Jun Zhang (9–12 July 2006). "Towards Automatic Mobile Blogging". *Multimedia and Expo, 2006 IEEE International Conference*; 2033–2036.

[17]. Chen, H.-R., & Huang, H.-L. (2010). "User Acceptance of Mobile Knowledge Management Learning System: Design and Analysis". *Educational Technology & Society,* Vol. 13 (3), pp. 70–77.

[18]. Cheong, R.K.F & Tsui, E.(2010). "The roles and values of Knowledge Management : an exploratory study". *Vine,* Vol 40 (2), pp. 204 - 227.

[19]. Cochrane, T.D. (2010). "Exploring Mobile Learning Success Factors". *ALT-J: Research In Learning Technology*, Vol. 18(2), pp. 133-148.

[20]. Dillon, A. (2001). "Beyond usability: process, outcome and affect in human computer interactions". *Canadian Journal of Library and Information Science,* Vol. 26(4), pp. 57–69.

[21]. Elgazzar, A.E. (2014). "Developing E-Learning Environments for Field Practitioners and Developmental Researchers: A Third Revision of an ISD Model to Meet E-Learning and Distance Learning Innovations".*Open Journal of Social Sciences*, Vol.2, pp.29-3. http://dx.doi.org/10.4236/jss. 2014.22005.

[22]. Gose, E. & Riddle, D. (2014). "Tablet Wars...The Tablet Strikes Back: Evaluating Tablet Use in E-Learning". In *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education,* pp. 672. Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).

[23]. Gould, J.D., Lewis, C.(1985): "Designing for Usability: Key Principles and What Designers Think", *Communications of the ACM,* March 1985, Vol. 28(3).

[24]. Huang, Y., Jeng, Y., & Huang, T. (2009). "An Educational Mobile Blogging System for Supporting Collaborative Learning". *Educational Technology & Society*, Vol. 12(2), pp 163-175.

[25]. Knudsen, Jonathan (October 2003). "A Life Pictured Online". *Technical Articles and Tips.* Sun Developer Network..

[26]. Mart, VJM & Enache, M. (2008). "Managing personal human capital for professional excellence: an attempt to design a practical methodology" *Knowledge Management Research & Practice,* Vol. 6 (1), pp. 52-61.

[27]. Nielsen J. (2009). Mobile Usability, *Alert box*, July 20, 2009.

[28]. Peterson, D. (2013). "Usability Heuristics for e-Text and Digital Course Materials". In. Jan Herrington et al. (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2013,* pp. 1116-1121. Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).

[29]. Priti,J. (2011). "Knowledge Management: the foundation of organizational knowledge management", *SA Jnl Libs & Info Sci 2011*, Vol. 77(1).

[30]. Budiu and J. Nielsen,(2011). *"Usability of Mobile Websites: 85 Design Guidelines for improving Access to Web-Based Content and Services through Mobile Devices"*, Nielsen Norman Group, 2011.

[31]. Rigby, Ben (2008). *"Mobilizing generation 2.0: a practical guide to using Web 2.0 technologies to recruit, organize, and engage youth"*, San Francisco : Jossey-Bass.

[32]. Siemens, G. (2004). *"Connectives: A learning theory for a digital age"*, E-learningspace.org, 12 December. Retrieved on 30 May 2014 from : http://www.elearnspace.org/Articles/ connectivis.htm

[33]. Tutty, J. I. & Martin, F. (2014). "Effects of practice type in the Here and Now learning environment." *i-manager's Journal of Educational Technology*, Vol. 11(2), Jul-Sep 2014, Print ISSN 0973-0559, E-ISSN 2230-7125, pp. 17-27.

[34]. **Wichansky, A. (2000).** "Usability test in 2000 and beyond". *Ergonomic*, Vol. 43(7), pp 998-1006

ABOUT THE AUTHOR

Dr. Akram Fathy Mostafa is Associate Professor in Instructional Technology in the Department of Instructional Technology at South Valley University (Qena) & King Abdulaziz University (Jeddah), Saudi Arabia. He was the "Hamdan Bin Rashid Al Maktoum" Award winner for Distinguished Academic Performance – the best Educational Research at the Level of the Arab World 2014.