PERSONALIZED LEARNING RELIABILITY OF TELL ME MORE: A DYNAMIC APPROACH

CONFIABILIDADE DE APRENDIZAGEM PERSONALIZADA DE DIGA MAIS: UMA ABORDAGEM DINÂMICA

FIABILIDAD DE APRENDIZAJE PERSONALIZADO DE TELL ME MORE: UN ENFOQUE DINÁMICO

Maria SHOBEIRY[1]

ABSTRACT: *This study investigated the personalized learning reliability of Tell Me More (TMM) (i.e. the extent to which two hypothetical identical learners receive the same level of instructional and learning support while using a courseware) within the dynamic framework of Tetzlaff, Schmiedek, and Brod (2020) in which personalized learning is considered to be the most reliable and effective when learners' characteristics are dynamically assessed during the learning procedure and the instructions are provided to them accordingly. The lessons, workshops, and activities of TMM's Dynamic mode were qualitatively analyzed and the results revealed that in order for TMM to provide a reliable personalized learning, it should be equipped with a placement test at the beginning of the course and a constant dynamic assessment technology throughout the learning process. Relying on adaptive activities chosen unsystematically by the learners themselves is not reliable in that most learners are neither capable of professionally estimating their own level of language proficiency nor are they trained to determine the required level of task difficulty for their activities. The results have implications for courseware designers to consider placement tests and dynamic assessment technology in their future designs to maximize the reliability of their personalized learning programs.*

KEYWORDS: *personalized learning reliability, Tell Me More, dynamic assessment, placement test.*

RESUMO: *Este estudo investigou a confiabilidade de aprendizagem personalizada do Tell Me More (TMM) (ou seja, a extensão em que dois alunos hipotéticos idênticos recebem o mesmo nível de apoio instrucional e de aprendizagem ao usar um material didático) dentro da estrutura dinâmica de Tetzlaff, Schmiedek e Brod (2020) em que a aprendizagem personalizada é considerada a mais confiável e eficaz quando as características dos alunos são avaliadas dinamicamente durante o processo de aprendizagem e as instruções são fornecidas a eles de acordo. As aulas, workshops e atividades do modo Dinâmico do TMM foram analisados qualitativamente e os resultados revelaram que para que o TMM proporcione uma aprendizagem personalizada confiável, ele deve ser equipado com um teste de nivelamento no início do curso e uma tecnologia de avaliação dinâmica constante ao longo do processo de aprendizagem. Depender de atividades adaptativas escolhidas de forma não sistemática pelos próprios alunos não é confiável, pois a maioria dos alunos não é capaz de estimar profissionalmente seu próprio nível de proficiência no idioma, nem são treinados para determinar o nível necessário de dificuldade da tarefa para suas atividades. Os resultados têm implicações para que os designers de material didático*

[1] PhD Candidate, Department of Applied Linguistics, University of Tehran, Tehran, Iran. Email: maria.shobeiry@ut.ac.ir, ORCID ID: https://orcid.org/0000-0002-2499-0366

considerem os testes de colocação e a tecnologia de avaliação dinâmica em seus projetos futuros para maximizar a confiabilidade de seus programas de aprendizagem personalizados.

PALAVRAS-CHAVE: *confiabilidade de aprendizagem personalizada, Tell Me More, avaliação dinâmica, teste de nivelamento.*

RESUMEN: *Este estudio investigó la confiabilidad del aprendizaje personalizado de Tell Me More (TMM) (es decir, el grado en que dos estudiantes idénticos hipotéticos reciben el mismo nivel de apoyo educativo y de aprendizaje mientras usan un material de curso) dentro del marco dinámico de Tetzlaff, Schmiedek y Brod (2020) en el que se considera que el aprendizaje personalizado es el más fiable y eficaz cuando las características de los alumnos se evalúan dinámicamente durante el proceso de aprendizaje y se les proporcionan las instrucciones correspondientes. Las lecciones, talleres y actividades del modo Dinámico de TMM se analizaron cualitativamente y los resultados revelaron que para que TMM brinde un aprendizaje personalizado confiable, debe estar equipado con una prueba de nivel al inicio del curso y una tecnología de evaluación dinámica constante. durante todo el proceso de aprendizaje. Depender de actividades adaptativas elegidas de forma no sistemática por los propios alumnos no es fiable, ya que la mayoría de los alumnos no son capaces de estimar profesionalmente su propio nivel de dominio del idioma ni están capacitados para determinar el nivel requerido de dificultad de la tarea para sus actividades. Los resultados tienen implicaciones para que los diseñadores de material educativo consideren las pruebas de ubicación y la tecnología de evaluación dinámica en sus diseños futuros para maximizar la confiabilidad de sus programas de aprendizaje personalizados.*

PALABRAS CLAVE: *confiabilidad de aprendizaje personalizado, Cuéntame más, evaluación dinámica, prueba de nivel.*

1.Introduction

In the field of language teaching and learning the use of technology and courseware has started since 1960s. Appropriate integration of technology and pedagogy can support learning effectively and engage learners in various ways since in the 21st century technology roots in people' daily lives all over the globe (Kenning, 2007). Some courseware can provide language learners with corrective feedback, proper instructional materials, authentic materials, and cognitively and affectively engaging learning materials based on their algorithm (Kruse 2004). Some language learning courseware can play the role of speaking partners, and some can provide the chance of global learning in all over the world through introducing suitable speaking partners to each other via internet. These methods of learning are motivational to language learners due to the possibility of personalization they provide during the learning practice (Lee 2008).

Among various available courseware, this study is mainly concerned with **Tell Me More** (TMM hereafter) in that this courseware is easily available to Iranian language learners and many Iranian language schools use it as a supplementary learning software in their programs.

TMM is a virtual language teaching software which is offered in English, Spanish, French, Italian, German, Dutch, Chinese, Japanese, and Arabic with 2000 hours of instructional materials for each language. TMM could be considered as a supplementary learning program to the main four skills of writing, reading, speaking, and listening through offering multimedia videos, digitized sounds, and state-of-the-art speech recognition technology for teaching pronunciation.

An intriguing functionality of TMM (version 10) is its dynamic mode which is defined as the adjustability of the software according to the users' needs, interests, educational goals, and personal profiles. The adaptation takes place during the language learning activities by constantly analyzing the users' responses to the questions and accordingly adjusting the next activities with the user's needs. This is a form of personalization in language learning which allows learners to progress at their own pace of learning without feeling any pressure to keep up with the other learners (Kukulska-Hulme, 2016; Tomlinson & Masuhara, 2018). Through providing personally suitable teaching materials for language learners and providing feedback TMM can turn traditional dependent learners into autonomous language learners (Bunting ,2010).

There are various types of activities in TMM workshops to provide a wide range of learning opportunities for the users. The most tangible activities in TMM comprise the following:

- Interactive dialogue
- Sentence pronunciation
- Word pronunciation
- Phonetic exercises
- Word association
- Word search
- Fill- in –the blanks
- Words and functions
- Words and topics
- Grammar practice

- Mystery phrase

- Crossword puzzle

- Word order

- Dictation

- Text transformation

- Written expression

- Video and questions

The extent of TMM (version 10) courses are very vast in that each course contains 1200 exercises which are categorized in 35 types of activities. The main features of educational procedures on TMM include:

- Interactive conversations with 15000 words and 8000-word glossary

- Grammar and 700 conjugated words using simple animated explanations.

- A detailed diary of learners' progress

- Personalized learning journey through adjustable activities

Strengths of the TMM courseware have been counted by Bunting (2010) as:

1. The operational system of the software is smooth and user-friendly specifically with regard to the video and sound components.

2. The various types of activities are inspiring and motivating to language learners

3. The program works well on Windows and mobile phones both android and ios

4. Switching among languages are easy in this program

5. The program supports six languages including Dutch, English, French, German, Spanish, and Italian.

6. Learners face a great deal of repetition of words during various activities

7. The program works with both mouse and keyboard which makes is easier for various users to enjoy the program.

8. The activities are very straight forward and instructions are available step-by step

Abovementioned statements were some general descriptions about the main characteristics of TMM program. In the following section some studies on various

aspects of TMM are reviewed to achieve a clearer picture of the role and effectiveness of this courseware in the realm of language learning.

2. Review of the related literature

Despite the large amount of studies performed on various aspects of computer assisted language learning in the literature, there is limited amount of studies incorporating TMM. Studies on TMM in the current literature could be categorized into two main groups: 1) the research in which the main focus was on the perception of the users of TMM (e.g. Hashim & Yunus ,2010; Epinosa,2013; Uthayakumaran & Kassim ,2018); and 2) the studies which investigated the effect of TMM on various aspects of learners' language proficiency which are usually limited in scope (e.g., Perez, 2014; Ayulistya ,2016).

The study of Hashim and Yunus (2010) is an example of surveying the users of TMM about their perceptions of TMM effectiveness and usefulness in learning settings. In this study the attitude of a number of ESL college lecturers in Malaysia toward the ease of use, usefulness, and suitability of TMM was explored through performing several semi-structured interviews. The results revealed a positive attitude of the Malaysian ESL teachers toward the ease of use, usefulness, and suitability of TMM. Nonetheless, they found that TMM is not perceived to be a suitable courseware for teaching and learning of writing. Another study in this realm is a mixed-method design research conducted by Uthayakumaran & Kassim (2018) on students' perception of the effectiveness of TMM as a pronunciation learning software. In this study the main focus was on vocabulary acquisition and pronunciation development of 28 university students. The researchers also demonstrated a mixed perception of the participants about the effectiveness of using TMM as a pronunciation learning software. Similar to the previous studies, the study of Epinosa (2013) illustrated a positive attitude of the group of university teachers in Spain toward utilizing TMM who employed it for a six month period of instruction. The results of this study revealed a moderate to low capacity of the program in improving learners' communication skills.

Gyamfi and Sukseemuang (2017) studied the perceptions, practices, and achievement of 340 EFL learners who used TMM as an instructional tool through. They employed questionnaire and semi-structured focus group interview to collect data and demonstrated a moderate level of participants' positive perception of TMM in learning English. Furthermore, the analysis of the participants' scores revealed an improvement

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in learners at elementary and advanced levels of language proficiency, while, strangely, intermediate learners showed a drop in their achievement after using TMM. In another study Gyamfi and Sukseemuang (2017) investigated factors affecting EFL learners' use of TMM and demonstrated a positive attitude of the EFL learners toward using TMM in that TMM was reported by the learners to be remarkably motivational and positively influential in their pre-communication skills improvement.

In the realm of studies that explored the effectiveness of TMM in language achievement the study of Ayulistya (2016) is of importance in that she investigated the effect of TMM on 20 high school students' pronunciation improvement and also explored their attitude toward using it. Her results indicated a significant effect of TMM on improving the learners' pronunciation with displaying 63% of the participants having held a positive attitude toward employing TMM as a teaching service. The interesting point in the literature on TMM is that this courseware is found to be effective in improving speaking and listening skills of its users; but, reading and writing skills are not reported to be affected by this courseware as much as expected. This is demonstrated in the study of Perez (2014) on the effectiveness of TMM in communication skills of 108 paramedical and non-paramedical students. The results revealed a high level of effectiveness of TMM in improving the listening and speaking skills of the participants; while, TMM was found to be less effective in developing their writing and reading skills.

What is missing from the literature on TMM is the lack of studies on the effectiveness of personalization and the reliability of personalized learning in TMM as is claimed by its producers. There are three modes for navigation in TMM including: *Free-to- Roam*, *Guided*, and *Dynamic* in which language learners can select the type of activities and the level of difficulty of the tasks they want to perform. The *Dynamic* mode of the program is the option that provides personalized learning through modifying users' choices according to their previous results in other activities and their interests, needs, objectives in their personal profiles.

Personalized learning is an educational approach within the theoretical framework of Gardner's (1983) multiple intelligence aiming at customizing learning procedures according to each learner's strengths, needs, objectives, skills, and interests. In this approach each student is provided with a learning plan which is mainly based on what they know and how they learn best (Lefevre, Jean-Daubias, Guin & 2009). Despite the promising results expected from this approach, applying personalization is

extremely difficult in traditional classroom environments in that modifying activities according to each learner's needs and goals could be overwhelming for any teacher; therefore, personalization is more practical in private tutoring sessions or virtual E-learning settings (Thiyagarajan, 2020).In setting up a personalized educational environment, providing appropriate instructional methods and suitable teaching materials occurs through employing dynamic assessment and providing constructive feedback (Pollard & James, 2004). Therefore, personalized education is about how learners learn rather than what they learn (Tomlinson, 2013).

In this study, the concept of **dynamic approach** to language learning is related to noticing constant changes in language learners' abilities and reacting to these changes accordingly during instructional procedures. This involves employing consistent dynamic assessment during the instructional process in order to discover learners' new educational needs and accordingly design suitable instructional plans throughout the teaching practice (Tetzlaff, Schmiedek, & Brod, 2020). Dynamic assessment is an interactive assessment in education which is based on the sociocultural theory of mind proposed by Vygotsky (1978). It identifies traits, abilities, or characteristics that a student has already mastered (the Zone of Actual Development) and determines the learner's abilities in performing a task with the help and support of a more knowledgeable person (within the Zone of Proximal Development). In other words, dynamic assessment determines the extent to which a learner needs to receive educational support during the learning procedure to achieve an educational goal.

Tetzlaff et al. (2020) proposed three ways in which learners' dynamic changes take place:

1. Change in response to an intervention even in the form of a short-term fluctuation. For example changes in attitude toward a topic or metacognitive strategies used by learners.

2. Changes in response to the same instruction in the same learner in various times. This means that the same person reacts to the same instruction differently from time to time.

3. Changes in response to the same instruction among various learners in time; meaning, various learners react to the same instruction differently and this difference even varies from time to time according to the contextual features and internal factors of the learners.

Considering these three main ways of constant changes in learners, only applying continuous dynamic assessment at different learning timescales can determine the appropriateness of the instructional design and suitability of the planned activities during the personalized learning procedure (Tetzlaff et al., 2020). It is worth mentioning that instruction in this paper is used as an umbrella term meaning any interaction between learning and teaching agents that has direct or indirect consequence in the learning procedure. Furthermore, "personalization" in this research is used synonymous with "individualization," meaning any adjustment of instructional practice is designed for a specific learner; therefore, it should include specified forms of assessment and instruction for each learner according to their activities and personal profile.

I define personalized learning reliability in this study as the degree to which two hypothetical identical learners with the same level of language proficiency and personal preferences will receive the same level of instruction and learning support from the courseware. Therefore, considering the abovementioned characteristics of TMM and the claimed capacity of the personalized learning functionality of it this study is an attempt to answer to the following research question:

> ➢ Is personalized learning in dynamic mode of TMM reliable from a dynamic approach to personalized learning?

3. Method

3.1 Data

To evaluate the personalized learning reliability of TMM (version 10), the lessons, activities, and workshops provided by the dynamic mode of TMM for three language learners at elementary, intermediate, and advanced levels were qualitatively analyzed as the data for this study.

3.2 Evaluation framework

The theoretical framework of Tetzlaff et al. (2020) is employed as the evaluation framework for personalized learning effectiveness and reliability in this study. In this framework, personalized learning is proposed to be the most reliable and effectual when relevant characteristics of learners are measured repeatedly throughout the learning procedure in a dynamic framework. This is the main outline of dynamic approach to personalized learning which include providing opportunities for instructional adaptation, setting appropriate learning goals, and reacting to affective-motivational fluctuations of the learners.

According to Tetzlaff et al. (2020) reliable and effective personalization includes three steps as follows:

Step 1—Initial assessment of learner characteristics which includes systematically assessing learners' features that are related to a specific learning procedure in order to establish a student profile at the outset of the course.

Step 2—Instructional design which fits learners' profiles the most in terms of their educational needs and goals.

Step 3—Progress assessment which includes using task performance analysis and embedded dynamic assessment to update the learners' profiles based on their constant progression.

As is shown in Figure 1, in this framework the steps 2 and 3 are extremely interconnected and support each other throughput the personalized learning procedure.

Figure1. Theoretical framework for personalized learning evaluation (Tetzlaff et al., 2020).
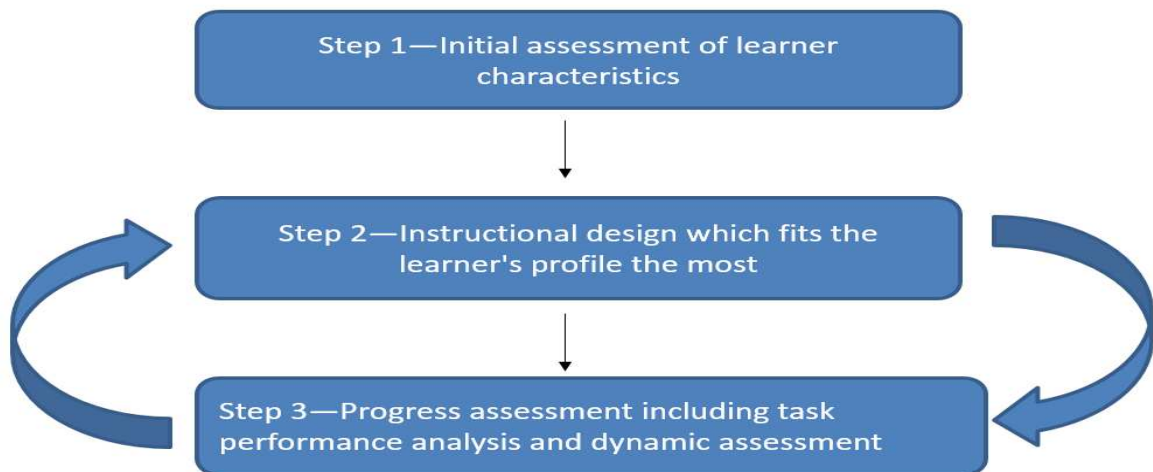

4. Data analysis and results

The profiles of three language learners are qualitatively analyzed within the framework of Tetzlaff et al. (2020) to indicate the personalized learning reliability of TMM.

The first noticeable fact in evaluating the program is the lack of placement test at the beginning step of the learning procedure. TMM provides learners with the option of making personal profiles before starting the learning process in which learners can indicate their own level of language proficiency and the level of task difficulty by

checking a box enumerated from 1 to 10plus. Then the learners are guided to choose among the three modes of *Free to roam*, *Guided*, and *Dynamic*. All the lessons and activities in any of these three modes will be matched with the level of proficiency that the learner registered in at the beginning step; but, the main problem with this type of personalization is that it completely relies on the learners' unprofessional estimate of their own level of language proficiency and cannot be considered reliable.

I start with the profile of a twelve- year old female elementary language learner. Since there is no placement test in TMM, she had to estimate her own level of language proficiency to be able to continue with making a profile. This was an overwhelming task for a twelve-year old beginning user of the courseware; thus, she was asked to take the Cambridge online placement test for young learners to indicate her level of language proficiency. The results of the Cambridge placement test showed that she was at A2 level of language proficiency according to Common European Framework of Reference for Languages (CEFR). Another challenge that a learner faces in using TMM is to select the level of task difficulty which is leveled from 1 to 10+ (shown in figure 2). In this pathway, there is no assessment of any kind or any form of direction to show how to estimation the appropriate level of difficulty for the various users. Therefore, personalization, up to this point, is mainly based on unprofessional estimations of the users without any systematic assessment of the users' educational needs or goals.

Figure2. The table of content difficulty for personalized adjustment in TMM.
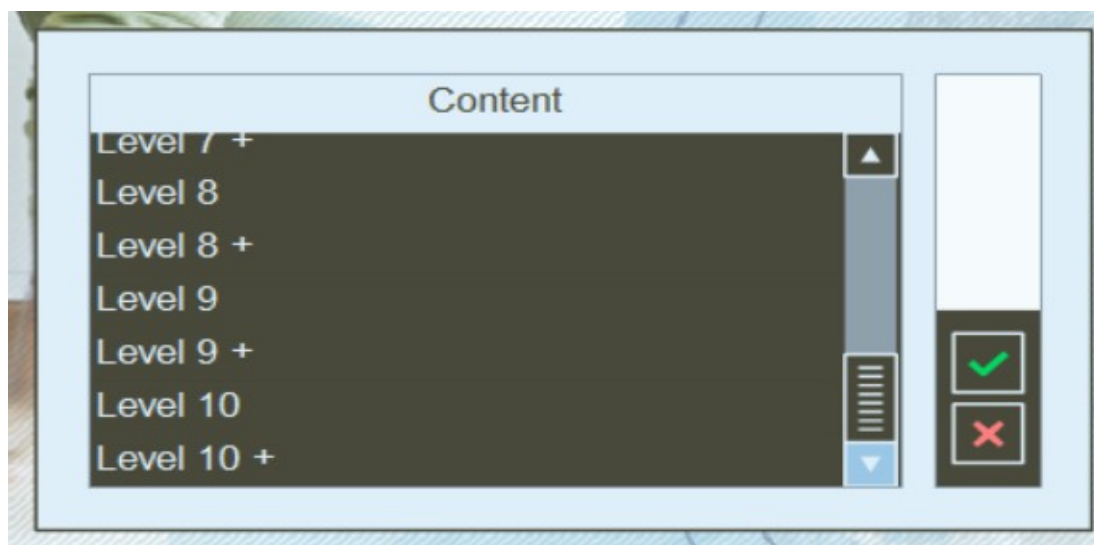
The next step is to select the objectives of learning and personalizing it according to knowledge (shown in Figure 3) and according to skill (shown in Figure 4) through indicating its level of difficulty. Again here there is no systematic assessment for indicating the most suitable level of difficulty in each skill for each learner. Learners unsystematically select the level of difficulty of their tasks as part of their personalized learning procedure which could be negatively influential and demotivating to them if the tasks' level of difficulty does not match their educational needs and goals (Ellis, 2016; Tomlinson, 2013b).

**Figure 3.** Selecting learning objectives and personalizing it in TMM according to knowledge
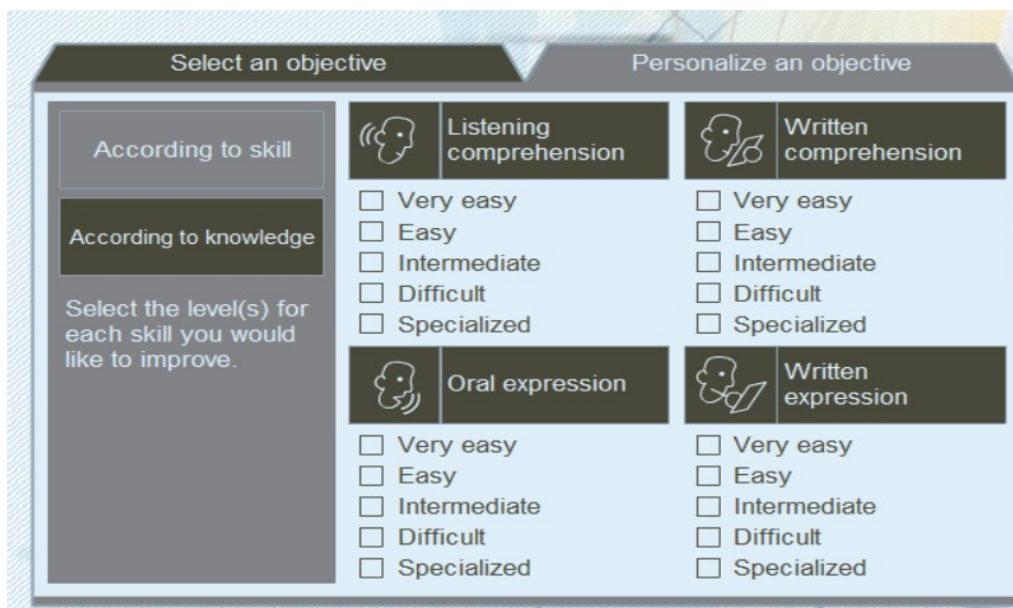
Figure 4. Selecting learning objectives and personalizing it in TMM according to skill
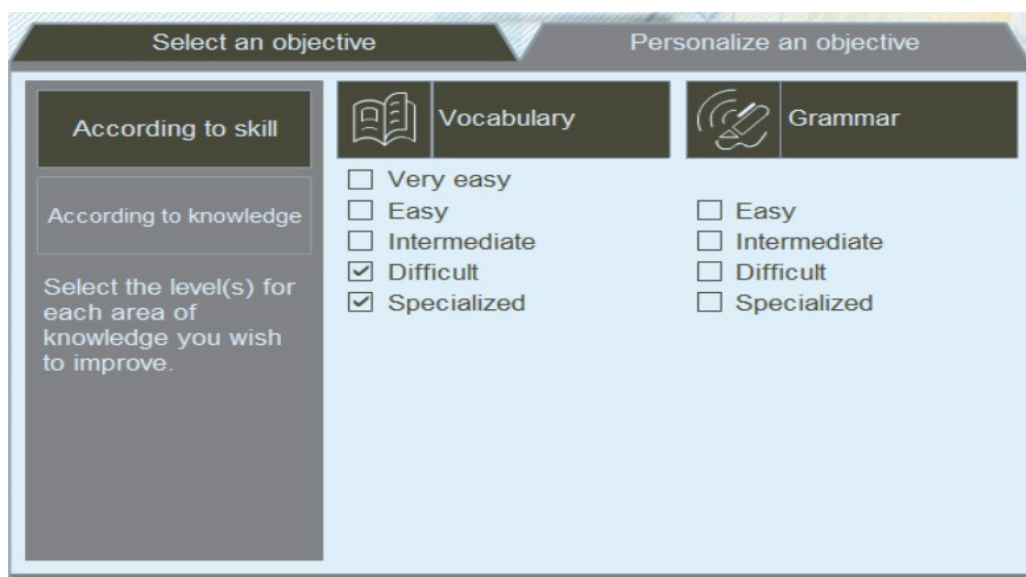
Furthermore, analyzing this learner's profile showed that when she selected a task's level of difficulty much higher than her suitable language proficiency level, the reaction of the program is to provide a task with a one or two levels lower than the level of the previous activity while in some cases it was needed for the learner to continue with at least 5 or 6 levels below the previous chosen task. This reveals the importance of dynamic assessment during instructions in personalized learning programs. Since TMM is not equipped with a constant dynamic assessment system, most of its activities neither match with the users' current level of language proficiency nor do they fulfill the users' educational needs. Although it is claimed by TMM producers that the Dynamic mode of the courseware defines activities and instructions according to the learners' needs (Figure 5), in reality there is no systematic matching system in TMM's Dynamic mode to ensure the reliability of the personalized learning of the program.

Figure 5. Dynamic mode of TMM.
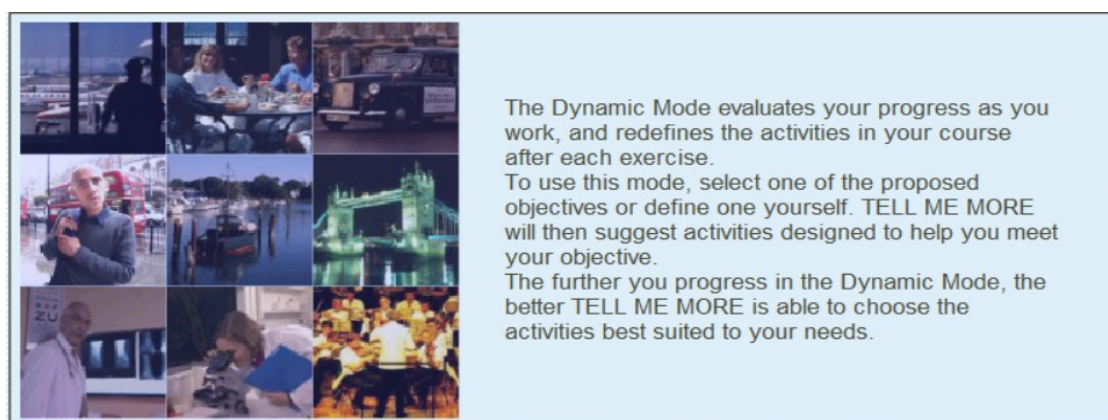
The second analysis is related to the profile of a 32-year old man in the intermediate level of language proficiency (B2) and the third profile was related to a 41-year old female pre-advanced user of TMM (C1). The noticeable point in analyzing the intermediate and advanced profiles was that TMM considers learner's objective progress and task completion (shown in Figure 6) as a determining factor for the level of success of the learning procedure. This is obviously a big flaw in that without any systematic assessment and only by relying on completing some tasks, which somehow could have taken place randomly, the level of language achievement cannot be reported as a success or failure. Moreover, task completion, without a systematic dynamic assessment, cannot be a rational and proper determining factor for identifying the learner's needs and their required instructions to attain their goals (Tetzlaff, et al. 2020).

Figure 6. Task performance evaluation in TMM.
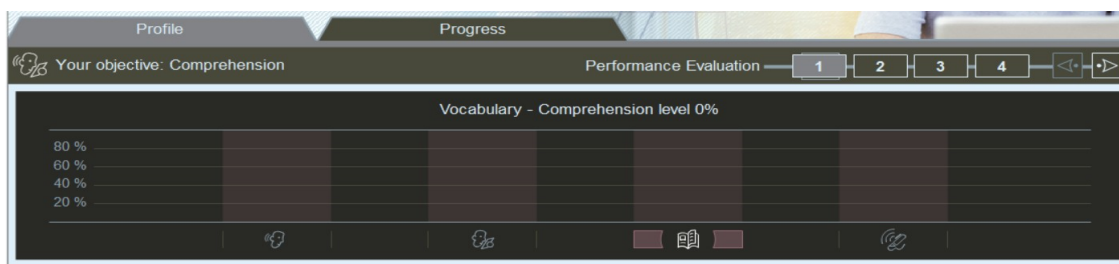
The role of need analysis and progress evaluation is even more obvious in intermediate and pre-advanced levels of language proficiency in that, at these levels, the main focus of learning is on developing effective communication rather than focusing on linguistic features; therefore, the role of receiving constructive feedback according to a systematic dynamic assessment is remarkably obvious which found to be missing in TMM.

5. Discussion

Personalization in language learning has been emphasized in the literature as an effective method of instruction (Pollard & James, 2004; Bernard, 2005; Tomlinson, 2013; Tetzlaff et al., 2020) and TMM is one of the learning programs that provides its users with a personalized learning environment. Although most studies in the literature demonstrated the learners' positive attitude toward using TMM (e.g., Hashim & Yunus; 2010Nielson,2011; Epinosa,2013; Uthayakumaran & Kassim ,2018) and its effectiveness on various aspects of language learning (e.g.,Perez ,2014; Ayulistya,2016; Gyamfi & Sukseemuang, 2017) the personalized learning reliability of this courseware has not been explored before this study.

Personalized learning reliability o is defined in this research as the degree to which two hypothetical identical learners with the same level of language proficiency and personal preferences will receive the same level of instruction and learning support from the courseware. With respect to this definition and the results of data analysis, TMM was found to be not of high personalized learning reliability due to the lack of two types of assessment: 1) a placement test at the beginning of the learning procedure 2) dynamic assessments throughout the learning procedure. The results are achieved within the theoretical framework of Tetzlaff et al. (2020) in which the reliability and effectiveness of a personalized learning program will be achieved through constant

dynamic assessment in which learners' level of proficiency and educational needs are measured repeatedly throughout the learning procedure.

6. Conclusion

TMM is a practical and motivating courseware in educational programs; however, in order to increase the personalized learning reliability of it, TMM should be equipped with a placement test at the beginning of the learning procedure and a constant dynamic assessment technology throughout the whole learning process and instruction. Relying on adaptive activities which are chosen unsystematically by the learners themselves, which is the case with the current version of the TMM program, is not reliable since the majority of language learners are neither capable of professionally estimating their own level of language proficiency at the beginning of the course nor are they trained to determine the required level of task difficulty for each lesson and activity throughout the course. The results have implications for courseware designers to consider placement tests and dynamic assessment technology in their future designs to maximize the reliability and effectiveness of their personalized learning programs.

7. REFERENCES

Ayulistya, T. (2016). Improving students' pronunciation through *Tell Me More* pronunciation software. *Indonesian EFL Journal, 2*(2), 110-116.

Bunting, J,.(2010). Tell Me More software program. *Teaching English as a second or foreign language,* 8(1), 2-23.

Department for Education and Skills (DfES) (2004a) A National Conversation about Personalized Learning. Nottingham: DfES.

Dolog, P., Henze, N., Nejdl, W., & Sintek, M. (2004). *Personalization in distributed e-learning environments. Proceedings of the 13th International World Wide Web Conference on Alternate Track Papers & Posters - WWW Alt. '04.* doi:10.1145/1013367.1013395

Ellis, R. (2016). Language teaching materials as work plans: An SLA perspective. In B. Tomlinson (Ed.), SLA research and materials development for language learning (pp. 203-218). New York: Routledge.

Espinosa, B (2013), Learning English using Tell Me More: Perspectives of university teaching staff as users of the online application. Retrieved on 1 May 2017 from https://www.researchgate.net/publication/278171803Learning.

Gardner, H. 1983. Frames of Mind: the theory of multiple intelligences. Heinemann.

Gyamfi, G., & Sukseemuang, P. (2017). EFL Leaners' perceptions, Practices and Achievement with the Online Learning Program Tell Me More. *Contemporary Educational Technology*, 8(4) 338-358.

Gyamfi, G. & Sukseemuang, P. (2017). Factors affecting EFL learners' use of the computer language learning program Tell Me More. *International Journal of Instructional Technology and Distance Learning*, *14*(2), 69-79.

Hashim, H., & Yunus, M. M. (2010). Learning via ICT: TELL ME MORE. International Journal of Learning, 17, 211-224.

Kenning, M. (2007). ICT and Language Learning. *From print to the mobile phone*. New York: Palgrave MacMillan.

Kukulska-Hulme, A. (2016). Personalization of language learning through mobile technologies: Part of the Cambridge Papers in ELT series. Cambridge: Cambridge University Press.

Ku, O., Hou, C.-C., & Chen, S. Y. (2016). Incorporating customization and personalization into game-based learning: A cognitive style perspective. *Computers in Human Behavior, 65, 359–368.* doi:10.1016/j.chb.2016.08.040

Kruse, K. (2004). CD-Roms for e-learning: Advantages and disadvantages. www.e-learningguru.com/articles/art1. [19 November 2008].

Lee, S. T. (2008). Teaching Pronunciation of English Using Computer Assisted Learning Software : An Action Research Study in an Institute of Technology in Taiwan. English Language and Literature Studies, 3(1), 219.

Lefevre, M., Jean-Daubias, S., Guin, N.(2009). Generation of pencil and paper exercises to personalize learners' work sequences: typology of exercises and meta-architecture for generators. *World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education*, 2843–2848.

Perez, A. (2014). Effectiveness of Tell Me More in enhancing communication skills. *Asia Pacific Journal of Multidisciplinary Research,* 2(6), 164-172.

Pollard, A. & James, M. (2004) Personalised Learning: A Commentary by the Teaching and Learning Research Programme. London: Economic and Social Research Council.

Thiyagarajan, G. (2020). Personalization and Visual Representation through Learning Analytics: A Meaningful Approach to Guide Self-Directed Learners. *International Journal of Psychosocial Rehabilitation*, *24*(5), 3298–3303. https://doi.org/10.37200/ijpr/v24i5/pr202037

Uthayakumaran,A., & Kassim, H. (2018). Student Perceptions on the Effectiveness of Using Tell Me More for Pronunciation Learning.*International Journal of Language Education and Applied Linguistics,* 08 (2) 83-91

Tetzlaff, L., Schmiedek, F., & Brod, G. (2020). Developing Personalized Education: A Dynamic Framework. *Educational Psychology Review*. Published. https://doi.org/10.1007/s10648-020-09570-w

Tomlinson, B. (2013b). Developing principled frameworks for materials development. In B. Tomlinson (Ed.), Developing materials for language teaching (2nd ed., pp. 95-118). London: Bloomsbury.

Tomlinson, B., & Masuhara, H. (2018). The complete guide to the theory and practice of materials development for language learning. Hoboken, NJ: WILEY Blackwell.

Vygotsky, L. S. (1978) Mind in Society: The Development of Higher Psychological Processes (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds.) Cambridge, MA: Harvard University Press.