Situated Learning: A Theoretical Base for Online Learning

Wikipedia Translation into Oshikwanyama at a Namibian school

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***Abstract*—This paper provides an in-depth literature review on situated learning and its conceptual model of cognitive apprenticeship and their influence on learning in an Information and Communication Technology (ICT) domain. These are used as epistemological basis to reflect on an intervention involving the translation of Wikipedia content into Oshikwanyama, an indigenous Namibian language in a high school context. This intervention follows a series of research works on ways to engage and integrate ICTs in African indigenous language classrooms. Cognitive apprenticeship principles provide participatory units of analysis which help to explicate the socially mediated learning process, in which all the elements co-contribute to learning in a community of practice using interactive multimedia such as the Internet. The paper argues that situated learning provides a useful theoretical and analytical lens through which a set of authentic activities – reflecting on the way knowledge is constructed and used in real life – can be explored in the classroom. Its key advantages seem to be access to expert performances, modeling of the processes, providing learners with multiple roles and perspectives, supporting collaborative construction of knowledge through coaching and scaffolding.**

Keywords-Information and Communication Technology; Situated Learning; Cognitive Apprenticeship; Wikipedia; Online learning; Translation.

I. INTRODUCTION

Learning environments are loaded with powerful digital devices connected to the Internet, which have revolutionized the way people interact, exchange messages, teach and learn. The web increasingly features "millions of web pages, site-archives, portals, databases and much more for ascertaining a kind of harvested-knowledge where learners can learn by themselves to construct knowledge" [1]. E-learning requires new skills, competencies and attitudes amongst teachers who are the designers and developers of classroom materials. This paper looks at the pertinence of situated learning theory [2], and its model of cognitive apprenticeship and its contribution to and implications for ICT use in the language classroom.

This theoretical background follows a qualitative case study aiming to investigate the use of Wikipedia translation as an additional teaching and learning tool. The intention of this study is to represent the complexity of Wikipedia translation in an Oshikwanyama first language classroom, by providing an in-depth representation of online translation as a real-time activity and engaging learners in interactive and collaborative learning mediated by ICT. We concentrate on the impact that ICT tools have on learning, and the motivation Wikipedia translation has on learners to learn Oshikwanyama. The study involved 32 high school learners who were involved in a survey on the accessibility to and use of ICT devices in Oshikwanyama First Language (elml, 2012), a basic computer training for learner participants and finally the Online Wikipedia translation project.

Therefore, the main aim in exploring this theoretical framework is to try to situate eLearning in the Oshikwanyama classroom as ICT integration across the curriculum is stipulated in the Namibian ICT policy for education [3] which maintains that teachers must try and find contexts in which to integrate ICT and ensure that it makes sense to learners so that they appreciate a new mode of learning. This paper is divided into five sections. Section two reviews literature covering the ontological and epistemological frameworks of situated learning and the model of cognitive apprenticeship. Section three discusses the methodology of the study, and section four presents a critical discussion of the findings. The final section concludes the study.

II. LITERATURE REVIEW

This literature review discusses situated learning framework based on its ontological perspectives and its model of cognitive apprenticeship and its influences on ICT integration in the classroom with respect to the use of Wikipedia translation.

i. Ontological and epistemological underpinnings

Situated learning stems from Vygotsky's social development theory [4], [5], in which learning (including language learning) is viewed as "the appropriation of socially-derived forms of knowledge; which are constructed through the exchange between persons and social and cultural circumstances" [6]. "Situation" encompasses aspects of the physical, social and cultural environment, including communication with peers during the learning process [7]. In situated learning, knowledge and skills are created in contexts that reflect how knowledge is obtained and applied in everyday situations [3].

Situated learning maintains that "knowledge is not a static symbolic representation, 'stored' in the brain of an individual, it is situated, being a product of the activity,

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context, and culture in which it is developed and used" [8]. Individuals, culture and languages are considered as a whole, co-existing as joint members of the knowledge construction community. ICT integration requires knowledge to be constructed through the interactions of the students within their corresponding socio-cultural environment. ICT tools that include the use of computers have the potential to alter and replace traditional forms of teaching and learning and serve as a vehicle for situated learning [9].

Lave [2], asserts that in situated learning, "knowledge is conceived as a set of tools stored in memory, carried around by individuals who take the tools and use them … after which they are stored away again without change at any time during the process". This relates well with the use of ICT tools in the language classroom. ICT may be used as an effective and attractive means of presentation, and more importantly, as a way to facilitate peer interaction in and out of the classroom. From the situated learning perspective, "integration of technology into instruction does not just mean to teach students how to use a piece of technological equipment or to teach students by drill and testing" [10]. It is rather a plan to use technological resources to assist students to construct meaningful knowledge by creating social, collaborative, inquiry-based activities and engage learners in critical and higher order thinking.

The computer plays a mediating role, providing a medium for linguistic and notational expression, especially in the language classroom [11]. ICT plays a significant role in enhancing social interactivity among learners and presenting information/ideas effectively for easy processing. This further means that ICT not only enables the transmission of the teacher's understanding to the students, but it is a medium through which teachers and students' understanding can be enhanced through social learning activities.

In proposing their model, Brown, Collins and Duguid [12] argue that meaningful learning will only take place if it is embedded in the social and physical context within which it is used. The core idea in situated learning is that learning is inherently social in nature [13]. This means that in situated learning, learning is shaped by the nature of the interactions among learners, the tools they use within these interactions, the activity itself, and the social context in which the activity takes place. These core ideas of situated learning are relevant for ICT use in the language classroom.

ii. Cognitive apprenticeship as a model for situated learning

Cognitive apprenticeship [14], [2], [3], is a model of learning based on the situated learning theory. This model is designed to "acculturate students into authentic practices by practitioners in their everyday work" [14]. In cognitive apprenticeship, learners collaborate with one another and their teacher to reach shared understandings. According to Lave [2], "Apprentices learn to think, argue, act and interact in increasingly knowledgeable ways with people who do something well, by doing it with them as legitimate, peripheral participants". Apprenticeship is not just a process of internalizing knowledge and skills, it is the process of becoming a member in a community of practice [15].

In cognitive apprenticeship, (i) learning occurs naturally through activities, contexts and cultures, (ii) concepts taken from the natural contexts and applications are taught, and (iii) more "apprentice-like' examples are presented [3]. This means that learning is seen as the notion of the apprentice observing the 'community of practice'. A community of practice helps learners to participate in a legitimately peripheral way, which allows them to have a broad access to arenas of mature practice. As learning happens the involvement in the culture increases, the learners participate in what is called, a 'legitimate peripheral anticipation' [2], [3] which enables them to progressively gather the culture of the group and get the meaning of what it takes to be a member.

Lave and Wenger [3], adopted Vygotsky's Zone of Proximal Development (ZPD) [5] in developing this model. According to Vygotsky the ZPD refers to "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers". Cognitive apprenticeship requires that a more experienced member of the community of practice is involved to plan and manage the learning situation [13]. This provides an opportunity for guided activities, which are offered in collaborative learning environments. A more knowledgeable other (the teacher or an experienced peer) and cultural artefacts (ICT tools and language) are regarded as important social components for communication.

The concept of cognitive apprenticeship can only promote understanding of the theories of teaching with ICT but it has little influence on the actual practice of using them in daily classroom teaching. Li and Ngan [16], claim that "teachers will never be competent in using ICT in teaching and learning if they are not given the opportunities to observe other more experienced teachers using ICT in teaching". In an intervention conducted at a Namibian school, to use English Wikipedia translation in the Oshikwanyama first language classroom the teacher needs to be knowledgeable in carrying out online lessons, time managements and more especially if they want to complete the lesson objectives, and be aware of cultural artifacts such as the use of language and the Wikipedia translation toolkit.

Stages of cognitive apprenticeship

Five extended stages of cognitive apprenticeship are proposed by Brandt, Falmer and Buckmaster (1993) as cited in [13]. These are analyzed in sequential phases, in the figure below:

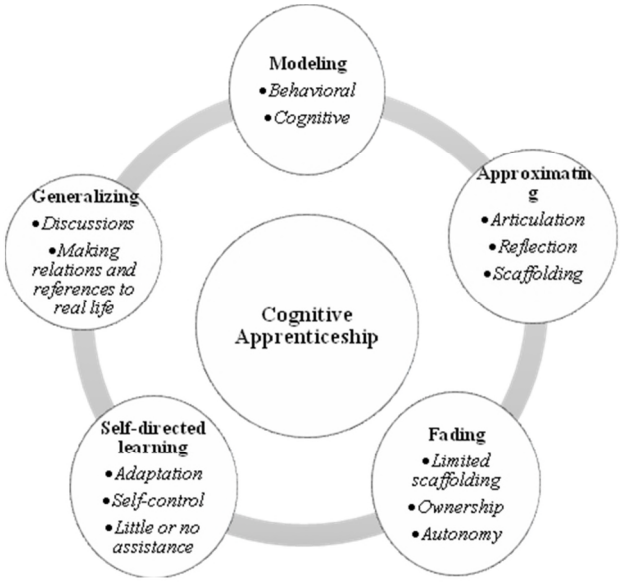

Figure 1. Cognitive Apprenticeship as a model for situated learning

Modelling is one of the strong attributes of situated learning [1], [7]. Modelling assists learners in observing the activity performed by an experienced member of the community and cognitively to allow the experienced member to share knowledge with the inexperienced members [9].

Thus, in cognitive apprenticeship, a teacher models the expert strategies needed to execute the function effectively e.g. the teacher demonstrates how to use certain ICT tools such as the Internet to translate English Wikipedia content and how to use different strategies in translating from the source language to the target language and scaffolds learners throughout the activity. Scaffolding in cognitive apprenticeship, requires a modification of the learning context to suit the individual learner or situation [13]. Scaffolding is collaborative in nature, it requires the task to be located within the learner's ZPD and gradual support of the learners' competence is essential.

Development of eLearning classroom environment for Situated Learning

Situated learning emphasizes the idea that "much of what is learned is specific to the situation in which it is learned" [3]. In cognitive apprenticeship, learning occurs while learners are working on tasks that are slightly more difficult than those they can manage independently, requiring the aid of their peers and instructors to succeed, [17], [18]. Therefore, situated learning can be considered experimental learning since learners learn by doing.

Integrating ICT in the first language classroom can be a daunting task for teachers. Teachers may struggle to decide on appropriate learning contexts, learning content and learning strategies to carry out online activities successfully. Situated learning may offer some of the most helpful strategies to deal with the effective development of learning situations.

Wikipedia translation is an activity grounded in everyday situations such as traditional translation with pen and paper in the language classroom, and the professional translation or localisation of the Internet content by professional translators. Thus, it is learning that could be transferred to other situations such as the Oshikwanyama language classroom using the English Wikipedia content. In this way, knowledge is transferred to similar situations, and learning becomes a result of a social process which is not separated from the world of action but exists in robust, complex, social environments made up of actors, actions and situations. Situated learning happens in a community of practice [3]. Thus, the situated cognitive use of technology could work best in complex situations that require transferring lower level skills to higher order thinking skills as there are many players (teachers and learners) that could contribute to the body of knowledge.

III. METHODOLOGY

This case study was conducted in a northern Namibian school located in the Oshana region. The group that was involved in this research study comprised 32 learners (21 girls and 11 boys) who are, (1) Grade 12 Oshikwanyama First language learners, (2) doing both English Second Language and Oshikwanyama First Language on the Higher Level. The group was chosen because of their language proficiency, which was necessary to carry out the translation from English to Oshikwanyama. Although not all the participants speak Oshikwanyama as their mother tongue at home, they were all taught Oshikwanyama throughout their schooling (from grade 1 to grade 12). In addition, two language teachers at the school participated as co-observers and reviewers of the translated Wikipedia texts/pages on different occasions.

This Wikipedia translation project was conducted in a large, well-ventilated computer laboratory, which consisted of 32 computers and a printer. The data was created through the translation of Wikipedia pages. The respondents had an opportunity to translate Wikipedia content into Oshikwanyama First Language in groups of 3-4 members. This was also done in two stages. Firstly, the participants were given a two-day basic computer literacy course. Afterwards the Wikipedia translations were carried out on four consecutive days. The researcher as a participant observer facilitated the translation. Daily reflection questionnaires were given to the participants to reflect on daily translation activities and an in-depth focus group interviews were conducted at the end of the translation exercise for overall evaluation of the project.

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IV. FINDING AND DISCUSSION

This section presents the findings which a discussed based on the characteristics or elements of situated learning environments in which they were analyzed [19][20].

a. *Authentic contexts*

Situated learning attempts to promote learning within the nexus of activity, tools and culture through collaboration and social interaction [12]. A physical and conceptual structure of the classroom, which comprises different ICT media was needed to facilitate the translation activity and was presented for learners to explore. A Wikipedia account was opened for their group, which gives the participants a range of activities to choose from and which could be edited at a time convenient to the learner outside the classroom.

Although learning should be organized in authentic settings for learners to apply "abstract concepts and self-contained examples" [14], the participants were optimistic about translating Wikipedia content, thus concerns were raised about the area of the learning context (i.e. online material) versus the number of learners with computer knowledge or background. Conversely, some respondents felt that learning on Wikipedia was interesting because they would gain knowledge about working with online activities and they believed this would improve their performance.

The participants also observed that although Wikipedia might be a good platform for learning languages and translation activities in the classroom there were risks attached. Some participants asserted that Wikipedia is a free encyclopedia, and thus its content is not reliable because it might be full of inaccuracies. It has transpired that during the translation activity, some learners were not truthful with their translation because they omitted and deleted relevant information. The participating teachers commented that this is risky in the classroom context, if the translation is to become a classroom activity, this would lead to learners failing. They pointed out that, when using activities like Wikipedia translation, learners must be given strict rules and a thorough explanation on assessment procedures. The activities must be treated in the same manner as any other classroom activity.

Time management was one of the contextual key issues which the participants highlighted as a critical factor in learning with authentic content in an authentic context. The participants observed that doing a Wikipedia activity was time-consuming.

b. *Authentic activities*

Cognitive apprenticeship methods try to acculturate students into authentic practices through activity and social interaction in a way similar to that evident – and evidently successful – in craft apprenticeship [12]. This means that in innovative teaching such as web-based teaching, the focus is placed on problem-solving, deliberate attempts are made to generate meaning and show understanding of the nature of the activity. Authentic Wikipedia activities, which are readily available on the Wikipedia portal, were introduced to the learners. Learners opened a Wikipedia account in their groups, which enabled them to access a wide range of online articles in English that they could edit and translate into Oshikwanyama. Learners were given the autonomy to select the articles that they wanted to translate, although they were asked to look at articles within their own context (Namibia, African people, countries or villages and articles within their social circles (the country's or continent's celebrities). Thus, the activity required cooperative engagement in the task and sustained thinking over the process and strategies of translation, using ICT.

Although learners were given the freedom to choose any article they wanted to translate, some of them pronounced their dissatisfaction with authentic articles. Learners came across some of the articles that were social but not educational and unnecessarily long. Some of the articles chosen were written in advanced, complex languages, which many failed to translate adequately, and which led to the meaning being mistranslated and message distorted. The findings indicate that learners were concerned about the value the article added to their education and knowledge. Articles that were not deemed educational were a demotivating factor, which they translated just for the sake of finishing.

c. *Expert performance*

Wikipedia translation is a new phenomenon in an African first language classroom. As such, it needs to be guided through expert thinking and modelling in order to move learners from being less knowledgeable to more knowledgeable. Learners need to have access to the observations of real-life, real-time translation episodes being performed by the teacher or an experienced online translator.

This Wikipedia translation project followed a spiral of activities designed to ensure that learners understood what was required of them. First, the two-day basic computer literacy training introduced learners to key areas of focus, with skills such as basic keyboard use, Internet searching or browsing, and the Wikipedia portal itself. Thus the participants had an opportunity to work on the project surrounded by experts in languages and in ICT, who guided and supported them and in some cases demonstrated learning and decontextualised instruction and strategies for them.

d. *Multiple roles and perspectives*

Situated learning provides the students with a chance to generate their own solution paths in which they take on roles as creative members of the community, who discuss, reflect upon, evaluate and validate learning procedures through collaboration [12]. In this project, multiple perspectives were provided in different ways. One way was that learners were assigned to work in collaborative groups

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in which each learner brought his/her perspective, experience and understanding of using ICT skills and language skills to the group. Another perspective concerned ICT skills versus the language skills and translation strategies among the participants and lastly, the participants' overall views on the Wikipedia translation process and the translation.

The whole design of the activity, the computers and Wikipedia itself brought in that natural curiosity of learners. Learners usually consult Wikipedia as a source of information on the Internet, or as an educational platform. This activity enabled them to search for and contribute to a wide range of knowledge collaboratively; in which the opportunity to share, debate, create or develop new knowledge was enhanced. Furthermore, learners got a chance to get different perspectives on ICT and languages from their peers. This enabled them to rely on the team's efforts because the successful completion of the task depended on group cooperation, time management and the translations strategies used.

e. Collaborative learning

Collaborative learning is the process of students working in teams to pursue knowledge and learning [7]. In collaborative learning, information, ideas, and problem solving are actively shared among the team members. In situated learning, learners participate and become intimately involved with a culture of learning, interacting with the community and learning to understand and participate in its history, assumptions, and cultural values and rules [3]. In translating Wikipedia pages, heterogeneous groups were organized with learners given the freedom to choose their partners. To many, group work was a serious arena for knowledge building and co-contribution to the translation activity. One advantage was that the learners learnt by articulation and negotiation of meaning, by which they were able to let other group members feed them with the knowledge and then they combined that knowledge to make decisions on how to translate. Although, most of the learners enjoyed working in groups, some were not satisfied with their group performance. Individual preferences in the group, time wasting were some of the disadvantages that the participants alluded to.

f. Reflective learning

A situated learning environment would require students to reflect upon a much broader base of knowledge to solve their problems, and this can be done when the student is able to predict, hypothesize, and experiment to produce a solution [17]. The translation was designed based on authentic context and authentic activities that required learners to reflect on their experience and beyond. Learners were given a daily reflection task to note their views, feelings and think about their strengths and weaknesses. In addition, the interview conducted with them served as a reflective tool that enabled learners to look back at the activity they had just finished, and reflect upon learning languages, using ICT and the motivation from engaging in the Wikipedia translation exercise. Some learners were excited about the whole experience and the outcome of the translation, and wished that their parents or grandparents could see and read their translation, because although it was not a perfect translation, they wrote it in a way that anyone could understand the meaning. This meant that even though this was intended to be a classroom activity, learners were optimistic about the diverse knowledge and understanding that it could carry out there for other people to get information in their own indigenous languages.

g. Articulation of learning skills

Articulation is needed in situated learning in order to enable tacit knowledge to be made explicit [19]. This articulation is procedural in the ICT context such as the Wikipedia translation where tools are used to produce knowledge, and where a learner as a novice becomes an apprentice to learning. In this translation activity, learners were not only given an opportunity to interact with computers, they were also given a chance to interact with each other, and interact with the Wikipedia content that they were translating. These learners had the opportunity to view the task from different aspects and use different strategies to translate the sentences. The activity was designed in such a way that allowed learners to learn in a social situation through group work, where they discussed the translation and strategies and tackled the whole process collaboratively. Many students were able to draw from their individual experience (tacit knowledge) and use it to provide effective strategies. They alluded to the way they tackled translations, mostly focusing on the area of failure experienced in the previous sessions.

h. Coaching and scaffolding

Scaffolding learning advocates that people learn in a community of practice, where learning requires development through ZPD [2]. This means that learners and novice members of the community need teachers to provide different forms of support for learning, through intrinsic scaffolding and coaching [19]. Learners were allowed to work in collaborative groups where more experienced others could assist in the learning process. The presence of a facilitator, an experienced teacher of English and Oshikwanyama who has advanced ICT skills helped learners to comfortably engage with the online activity. The presence of an additional teacher also contributed to the success of the translation. Learners were able to consult and ask the meaning of the words that they totally failed to translate. In some cases, learners asked for clarity when it came to the spelling of words or using the website.

i. Authentic assessment of learning within the task

Assessment involves the process in which learning outcomes are assessed and evaluated. In teaching through

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ICT integration, authentic assessment requires "student time and effort in collaboration with others and, as with authentic activities, requires complex, well-structured challenges that involve judgment and a full array of tasks within the assessment seamlessly integrated in the activity" [20]. During the translation, learners were involved in the process of error analysis in which they were asked to identify different errors. This helped learners to correct those errors immediately and choose the most suitable/closest terms. After learners finished with the translation, they were involved in retrospective assessment in which they were asked to read the passage (several groups 3 out of 8 read aloud for the whole class) and then compared it with the source text. In this way the whole group was given the opportunity to judge their translation, check for accuracy and its effectiveness in case it was decided that the Wikipedia translation process become part of Oshikwanyama curriculum.

V. CONCLUSION

In this paper, we provided a qualitative analysis of literature based situated learning and the model of cognitive practices through the lenses of eLearning and Language learning. The use of English Wikipedia translation into Oshikwanyama was explored. The review indicates that, as an educational platform, Wikipedia presents a good chance of involving learners as apprentices into new and practical learning in an authentic context using authentic content, collaboratively. The adoption of situated learning ensures the enculturation of beliefs and improved self-esteem of learners. Furthermore, situated learning widens the zone of proximal development (ZPD), helping learners to carry out an activity and achieve learning in an ICT integrated environment.

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