



**Faculty of Cognitive Sciences and Human Development**

**Learning at Telecentres: A Study on Indigenising Instructional Design  
for Communities at Remote Rural Sarawak**

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Learning at Telecentres: A Study on Indigenising Instructional Design for  
Communities at Remote Rural Sarawak

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## DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgements have been made, the work is that of the author alone. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.



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## **ABSTRACT**

Disparities among the communities with access to ICT development are especially apparent for those located in geographically remote and rural areas. Governments, agencies, and organisations worldwide have rolled out various ICT-related projects, with telecentres being the most widely adopted and deployed model in developing countries. Although many learning activities have been implemented at these telecentres for the communities they serve, most of the literature has focused primarily on user acceptance, human development, sustainability, telecentre performance, and impact assessment, rather than the delivery of learning and training activities at the telecentre. By first studying the initial ICT literacy training programme at the telecentres, the study focused on examining the potential to build culturally inclusive instructional design and how it could stimulate knowledge sharing and co-creation among indigenous community members. The study then examined how a community-led learning programme was implemented at two research sites, focusing on culture-based aspects that were not adequately considered in ICT literacy training programmes, such as culturally-specific instructional strategies, culture-specific assessments, and a focus on cultural artefacts, history, and knowledge. The study also looked into the benefits of using an indigenous instructional design at these telecentres, and self-determination theory was used to see how well the indigenous instructional design could satisfy the three psychological needs of autonomy, competence, and relatedness to strengthen intrinsic motivation. The study also examined the role of telecentres today in supporting the learning needs of indigenous communities, especially in fostering knowledge sharing and co-creation.

Document data, interview data, and observations were retrieved from informants who were members of project teams that initiated ICT literacy training and a community-led learning programme at selected research sites in Sarawak, as well as indigenous communities that participated in the training and learning programmes. Findings from the interview data highlighted that the indigenous communities revealed a need for a learning environment that catered to their needs as indigenous learners rather than one that suited more formal settings. It also showed that when these cultural aspects were purposively included in the instructional design model, the motivation to share and co-create knowledge was strengthened, indicating the value of using an indigenised instructional model. The study identifies critical considerations for effectively implementing learning and training programmes that would support the basic psychological needs and foster learning motivation among the indigenous community members. The study proposes an indigenised instructional design model that adopts a selection of requirements established in previous studies and community feedback.

**Keywords:** Indigenous communities, indigenised instructional design, knowledge sharing, telecentres, intrinsic motivation

***Pembelajaran Di Telecentre: Kajian Mengenai Reka Bentuk Pengajaran Pribumi Untuk Komuniti Di Luar Bandar Sarawak***

***ABSTRAK***

*Jurang akses kepada pembangunan ICT jelas ketara di antara masyarakat bandar dan mereka yang tinggal di kawasan terpencil dan luar bandar Sarawak. Telecentre merupakan model yang paling banyak diguna pakai di negara-negara membangun yang pernah diusahakan oleh kerajaan, agensi, dan organisasi di seluruh dunia, demi meningkatkan akses dan penggunaan ICT. Walaubagaimanapun, sebahagian besar kajian yang pernah dijalankan untuk mengenal pasti keberkesanan telecentre lebih tertumpu kepada penerimaan pengguna, pembangunan sumber manusia, nilai keberlanjutan, penilaian prestasi fizikal, dan impak kepada masyarakat secara am. Keberkesanan penyampaian aktiviti pembelajaran dan latihan masih kurang diberi perhatian terutamanya dari aspek empirikal. Kajian ini bermula dengan meninjau keberkesanan program latihan literasi ICT sedia ada di lokasi-lokasi sedia ada di Sarawak, dan seterusnya memfokus kepada pembinaan suatu rekabentuk pengajaran yang bersifat inklusif dan peka budaya setempat. Ia merungkai bagaimana rekabentuk tersebut mampu meningkatkan minat untuk perkongsian dan pembinaan pengetahuan dalam kalangan ahli masyarakat orang asli. Kajian ini juga mendalami bagaimana sesuatu program pembelajaran yang diterajui oleh ahli kumpulan masyarakat asli dilaksanakan di dua tapak penyelidikan. Tumpuan diberikan kepada aspek dan nilai budaya dalam proses pembinaan ilmu menggunakan teknologi. Antara konstruk yang diselidiki adalah strategi pengajaran khusus budaya, penilaian bersifat khusus budaya, dan fokus pada artifak budaya, sejarah setempat dan pengetahuan. Kajian ini juga mengenal pasti faedah penggunaan reka bentuk pengajaran ini dari perspektif masyarakat asli sendiri. Teori Self*



*Determination telah digunakan untuk melihat sejauh mana reka bentuk pengajaran asli dapat memenuhi tiga keperluan psikologi autonomi, kecekapan, dan perkaitan ilmu yang lazim digunakan untuk mengukuh motivasi intrinsik pembelajaran. Kajian ini juga menilai peranan telecentre kini, dalam menyokong keperluan pembelajaran masyarakat orang asli, terutamanya dalam memupuk perkongsian dan penciptaan pengetahuan secara berkelompok. Data yang dikumpul adalah dalam bentuk dokumen, transkrip temubual dan nota pemerhatian. Data kajian diperoleh dari tiga sumber - ahli pasukan projek yang menggiatkan latihan literasi ICT, ahli masyarakat asli yang menerajui program pembelajaran di tapak penyelidikan terpilih di Sarawak, dan ahli masyarakat asli yang telah menyertai program latihan dan pembelajaran yang dianjurkan. Penemuan penyelidikan menunjukkan pentingnya keperluan persekitaran pembelajaran yang lebih relevan untuk keperluan masyarakat asli sebagai pelajar pribumi. Hasil kajian juga menunjukkan keperluan menitik beratkan elemen dan nilai budaya setempat dalam pembentukan model reka bentuk pengajaran yang dibina untuk masyarakat. Program latihan ICT perlu menitikberatkan elemen motivasi yang menggalakkan perkongsian dan pembinaan ilmu pengetahuan membina pengetahuan bersama. Dapatan kajian juga jelas menunjukkan pentingnya pertimbangan kritikal yang keperluan asas psikologi dan motivasi pembelajaran dalam kalangan ahli masyarakat orang asli. Justeru, hasil kajian ini adalah suatu cadangan model reka bentuk pengajaran berasaskan budaya setempat yang peka kepada keperluan masyarakat asli Sarawak. Kajian seterusnya perlu meninjau elemen nilai budaya setempat yang khusus kepada lokasi dan kumpulan etnik Sarawak, untuk mendalami kepelbagaian keperluan psikologi dan motivasi ilmu masyarakat asli.*

**Kata kunci:** *Masyarakat asli, rekabentuk instruksi asli, perkongsian dan pembinaan pengetahuan bersama, motivasi, ICT*

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# CHAPTER 1

## INTRODUCTION

### 1.1 Background of the Study

The global technological boom brought to attention not only the advancements in technologies but also highlighted the vast differences between those who had access to this boom and those who did not. As the city dwellers continue to leverage on the development of technology, one of the concerns has been on how to ensure that communities living in rural areas are given similar if not equal access to technology as their urban counterparts. Also known as the digital divide, this gap has been described to be the visible gap between communities that have access to technology and communities that do not; or the gap between those who use digital technologies and those who do not (Ndeti, 2003; Tinio, 2003, Hargittai & Hinnant, 2008; Perrin, 2019; Beaunoyer et al., 2020; Lai & Widmar, 2021). The evolution of this concept has been observed over the years, as the first level of the digital divide was seen to focus on connectivity before the focus shifted towards the concern of the development of skills and abilities required to use Information and Communication Technology (ICTs), which was recognised as the second level of the digital divide. The third level of the digital divide looked at measuring the tangible results of using the Internet (Scheerder et al., 2017). Today, there are many studies examining the digital divide phenomenon (Scheerder et al., 2017; Karar, 2019; Hidalgo et al., 2020; Unwin, 2020), all of which have provided a variety of definitions and ways to understand the digital divide in greater detail.

For communities located in geographically remote and rural areas, these disparities are especially evident, as they do not have the necessary infrastructure and exposure to

technology to benefit fully from these technological advancements. The digital divide between communities has also been reported by researchers, who have observed that even in advanced economies, rural and remote communities that are left behind in terms of educational and technological equity and access still exist, and this has led to them facing challenges such as a brain drain of talent, skills, training or development, as well as limitations of distance learning (Oestmann & Dymond, 2001, Hennessy et al., 2016; Thompson, 2020).

As a result of this, governments, agencies, and organisations worldwide sought to improve citizens' living and socio-economic status through the implementation of various ICT programmes that have a strong emphasis on social and economic development (Brown & Grant, 2010; Walsham, 2012). More initiatives were put in place to facilitate modernising the state, such as digitising economies and government services and introducing these interventions to citizens in developing countries (Lin et al., 2015).

Of the many ICT related projects rolled out, telecentres were the most widely adopted and deployed in developing countries (Mukerji, 2010; Pick et al., 2013, Githinji, 2022). Offering access to ICTs for educational, personal, social and economic development (Harris et al., 2003), these telecentres were seen to be a solution to “address the issues of access by providing technology, develop human capacity and encourage social and economic development” (Oestmann & Dymond, 2001, p.3). It was also expected that the establishment of telecentres would support development thrusts and policies and “educational and community development in both rich and poor countries” (Dhanarajan, 2001, p.v). While there have been numerous reports celebrating the success of these initiatives (Gogoi & Saikia, 2020), especially in terms of socio-economic and

communication development, it must be noted that these rural telecentres also face challenges in their operations. Some of these trials include a lack of telecommunication infrastructure, high rates of non-literate users, and users who often have little formal education and little familiarity with information technology (Girardet, 2000). Not much has changed since this report, and these challenges are still visible today, especially in Sarawak. It was observed that a majority of the community members living at the telecentre sites in Sarawak belonged to the older age bracket and had little formal education. They were also not familiar with ICTs, and their responses towards the telecentres reflected this as well.

## **1.2 Problem Statement**

In considering this observation, the delivery of learning and training activities should be a focus of the telecentres, especially when the delivery of various ICT literacy training, e-learning activities, and other offline learning activities are conducted within these spaces. Interestingly enough, while the telecentre has served as a space for its users to engage in learning activities, existing literature has focused mainly on **user acceptance** (Abdul Razak & Abdul Malek, 2008), **effectiveness in terms of infrastructure and number of users** (Amariles et al., 2006; Hassan & Megat Tajuddin, 2010; Ibrahim et al., 2011), **human development** (Cecchini & Raina, 2004; Mathur & Ambani, 2005; Ibrahim et al., 2015), **sustainability** (Ernberg, 1998; Harris, 2001; Hudson, 2001; Hassan & Megat Tajuddin, 2010; Abdul Malek et al., 2014), **management** (McConnell, 2001; Hanna, 2010; Ibrahim et al., 2010; Chew et al., 2013), **financial** (McConnell, 2001; Abdul Razak & Abdul Malek, 2008; Ibrahim et al., 2010) **telecentre performance and impact assessment** (Earl & Carden, 1999; Whyte, 1999; Wakelin & Shadrach, 2001; Amariles et

al., 2006) as well as **evaluation planning and guidelines** (San Sabastian, 1999; Contreras-Budge, 1999; Scharffenberger, 1999; Hudson, 1999; Whyte, 2000).

While training at the telecentre has been emphasised by many authors (Baron, 1999; Dahms, 1999; Macome & Cumbana, 2001), assessment and evaluation of learning at the telecentre have yet to be fully explored in the literature. Primarily, investigations into the design and development of training and teaching programmes conducted at the telecentre have not been adequately addressed empirically, as existing reports indicate the type of activities performed but not the specific instructional design used. Baron (1999, p. 40) observed that there are some “shortcomings and limitations in the methodologies and instruments used in the training processes” and that “perspectives that went beyond technical training and matters related to the use of new technologies” should have been included in the rollout of the training. Baron went on to say that other essential tools that could have assisted with introducing new users to new technologies and methodologies that could help users develop an independent capacity to build on their knowledge base to resolve problems are seen as necessary when establishing a telecentre. The example of the community at Kerigma was highlighted. These community members experimented with activities, games, and more participatory approaches to collectively build knowledge, emphasising the need to cater to the community’s unique characteristics. These observations indicate a necessity to look into how training is designed and developed for users at the telecentre, especially for the particular needs and characteristics of the communities involved.

As earlier identified, there is limited empirical evidence emphasising the instructional design used when planning training sessions at telecentres. A report by Juan

et al. (2010) sheds some insight into this, describing that the training modules used to deliver the ICT literacy programme were based on the ADDIE model of instructional design. The ADDIE model is a widely used instructional design framework that emphasises five phases of instructional design: Analysis, Design, Development, Implementation, and Evaluation and is primarily used by educators when developing instructional content. A reason why the ADDIE model was chosen for the ICT literacy training is because the trainers could use the information gained during the analysis stage to advise the development of the modules for the communities. Aside from that, the team also used Bloom's Taxonomy, a hierarchical ordering of cognitive skills, to address which levels of competency the users should achieve (Juan et al, 2010). While the report does mention the usage of these frameworks, it does not detail if the use of both the ADDIE model and Bloom's Taxonomy were efficient in addressing the learning needs of the indigenous communities.

Coming back to the observation that many of the telecentre users have little formal education, it is pertinent to consider that these users are accustomed to informal learning conducted within the community. Indigenous communities have their own ways of learning within a community, as evidenced by the learning practices of indigenous communities around the world (Bates et al., 2009; UN, 2019). Research has also shown that indigenous community members do not thrive in learning environments that do not include their learning styles and preferences, as reported in studies conducted with indigenous communities (Salleh & Ahmad, 2009; Hogue, 2012; Abdul Wahab et al., 2013; Wong & Osman, 2016; Buxton, 2018; Rosnon & Abu Talib, 2019). Findings in the literature regarding this subject have primarily written that these indigenous students often fall out of the education system, and felt like they did not fit in with the system due to a